Lake Walcott Subbasin Assessment and Total Maximum Daily Load

TMDL Five-Year Review

Hydrologic Unit Code 17040209

State of Idaho
Department of Environmental Quality
October 2019

www.deq.idaho.gov

Acknowledgments

Thank you to the following Idaho Department of Environmental Quality staff for collaborating on this 5-year review: Richard Bupp, Sara Kaster, and Sean Woodhead, Twin Falls Regional Office and Graham Freeman, State Office. We also thank the Walcott Watershed Advisory Group for their participation.

Prepared by
Idaho Department of Environmental Quality
Twin Falls Regional Office
650 Addison Avenue West, Suite 110
Twin Falls, ID. 83301

Printed on recycled paper, DEQ October 2019, PID 5YST, CA code 52317. Costs associated with this publication are available from the State of Idaho Department of Environmental Quality in accordance with Section 60-202, Idaho Code.

Table of Contents

List of Tables

List of Figures

Abbreviations, Acronyms, and Symbols

§303(d)	refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section
§	section (usually a section of federal or state rules or statutes)
AU	assessment unit
BK	background
BLM	United States Bureau of Land Management
BMP	best management practice
C	Celsius
CFR	Code of Federal Regulations (refers to citations in the federal administrative rules)
cfs	cubic feet per second
cfu	colony forming unit
COLD	cold water aquatic life
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
DO	dissolved oxygen
DWS	domestic water supply
E. coli	*Escherichia coli*
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FG	future growth
GIS	geographic information system
HUC	hydrologic unit code
IDAPA	Refers to citations of Idaho administrative rules
IPDES	Idaho Pollutant Discharge Elimination System
kWh	kilowatt hour
LA	load allocation
lb	pound
mg/L	milligrams per liter
mL	milliliter
MOS	margin of safety
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	nephelometric turbidity unit
PCR	primary contact recreation
PNV	potential natural vegetation
SCR	secondary contact recreation

SS	salmonid spawning
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TP	total phosphorus
TSS	total suspended solids
US	United States
USDA	United States Department of Agriculture
USFS	United States Forest Service
WAG	watershed advisory group
WARM	warm water aquatic life
WLA	wasteload allocation
WWTP	wastewater treatment plant

Executive Summary

This 5-year review of the Lake Walcott subbasin assessment and total maximum daily load (TMDL) addresses the water bodies in the subbasin that are in Category 4a of Idaho's most recent Integrated Report, including those water bodies on the original (1996 and 1998) Clean Water Act §303(d) list. Additional Lake Walcott TMDLs were developed including Fall Creek, Rueger Springs Creek, and Marsh Creek (DEQ 2006, 2007, and 2013). This 5-year review was developed to comply with Idaho Code §39-3611(7) and describes current water quality status, pollutant sources, and recent pollution control efforts in the Lake Walcott subbasin. Table A shows the assessment units (AUs) and pollutants addressed in the TMDLs (DEQ 2000, 2006, 2007, and 2013). Temperature for Marsh Creek AUs is not included in this 5-year review, but it will be reviewed at a later date.

Table A. Lake Walcott subbasin AUs and pollutants addressed by the TMDLs.

Assessment Unit Name	Assessment Unit Number	Pollutant	TMDL Approval Year
D16 drain and 2nd-order tributaries to the Snake River	ID17040209SK001_02	TP	2000
Snake River	ID17040209SK001_07	TP	2000
Duck Creek, Spring Creek	ID17040209SK002_02	TP	2000
Snake River	ID17040209SK002_07	TP	2000
Marsh Creek	ID17040209SK003_03	Temperature, *E. coli*	2013
Marsh Creek	ID17040209SK003_04	Temperature, *E. coli*	2013
Fall Creek	ID17040209SK007_02	TP, TSS, *E. coli*	2006
Fall Creek	ID17040209SK007_03	TP, TSS, *E. coli*	2006
Rock Creek	ID17040209SK008_04	TSS	2000
South Fork Rock Creek	ID17040209SK009_02	TSS	2000
South Fork Rock Creek	ID17040209SK009_03	TSS	2000
South Fork Rock Creek	ID17040209SK009_04	TSS	2000
East Fork Rock Creek	ID17040209SK010_02	TSS	2000
East Fork Rock Creek	ID17040209SK010_03	TSS	2000
Rueger Springs Creek	ID17040209SK011_03	TP, TSS, *E. coli*	2007

Notes: total phosphorus (TP), *Escherichia coli* (*E. coli*), total suspended solids (TSS).

Subbasin at a Glance

The Lake Walcott subbasin (hydrologic unit code 17040209) is located in southcentral Idaho (Figure A). The subbasin reach of the Snake River runs from below American Falls Dam (river mile 714) to Milner Dam (river mile 639). Major tributaries include Ruger Springs Creek, Ferry Hollow, Warm Creek, Little Creek, Rock Creek, Fall Creek, Lanes Gulch, Raft River, and Marsh Creek; all of which discharge into the Snake River. In addition, this subbasin contains Lake Walcott, Milner Lake, and Craters of the Moon National Monument. The Craters of the Moon

National Monument area is north of the Snake River Plain. Any runoff from this area seeps into the aquifer and emerges at the Thousand Springs reach of the middle Snake River.

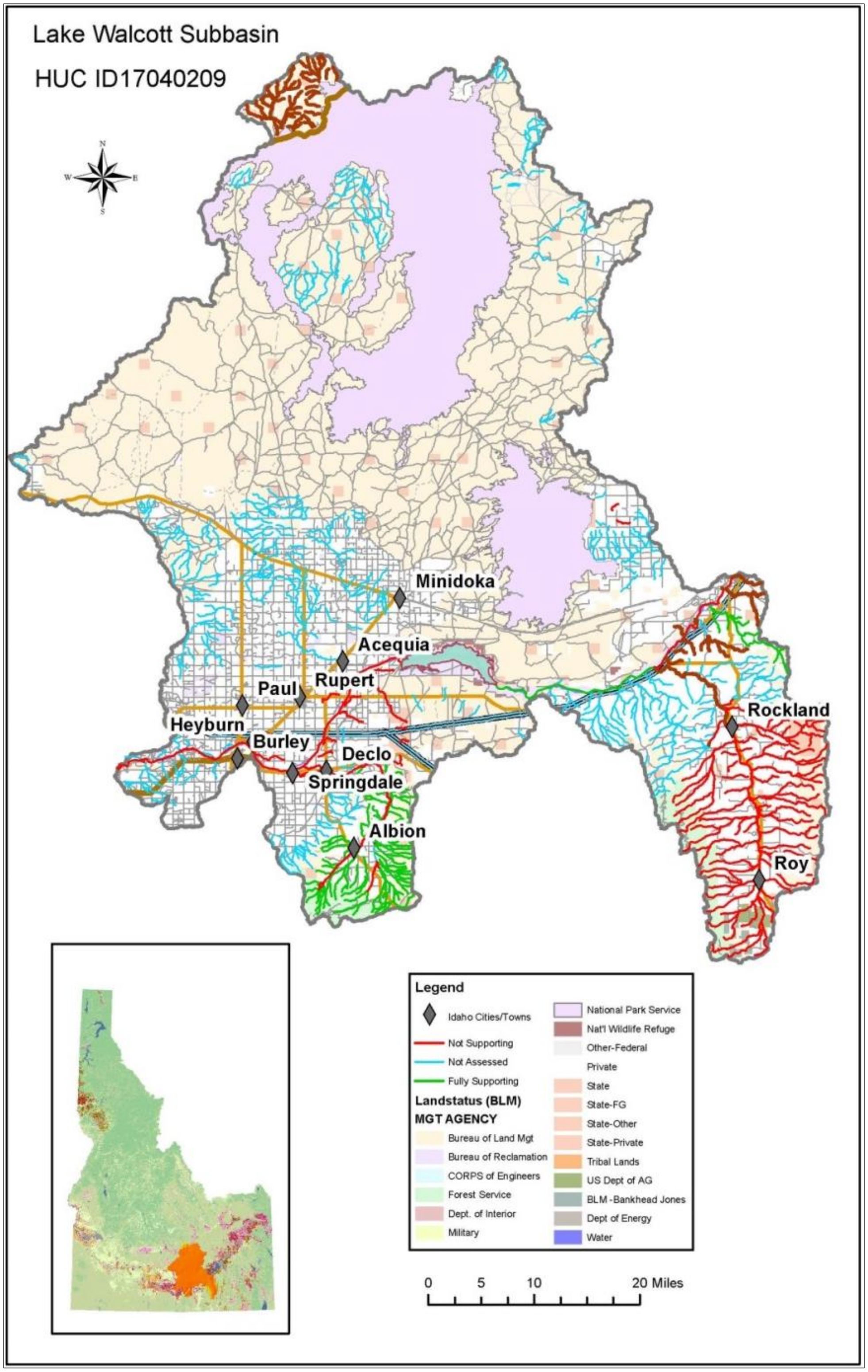

Figure A. Lake Walcott subbasin.

In Idaho's most recently approved Integrated Report (DEQ 2018), DEQ compiled data from 2012–2016, which were used to identify waters meeting water quality standards and supporting beneficial uses. The current status of water quality in the Lake Walcott subbasin is summarized in Table B.

Table B. Integrated Report (DEQ 2018) category summary.

Integrated Report Category	Rivers and Streams		Lakes	
	Number of AUs	Mileage	Number of AUs	Acreage
2	4	211.5	—	—
3	13	791.5	2	88.5
4a	14	424.1	—	—
4c	1	13.4	—	—
5	5	180.1	1	8,384.7

Figure B compares the estimated percentage of the watershed (mileage) in Category 4a (TMDL completed and approved by the US Environmental Protection Agency) and Category 5 (impaired waters needing a TMDL) for stream impairment. Category 5 does not include the mileage of mercury impairment in Lake Walcott, but it is listed in Table B.

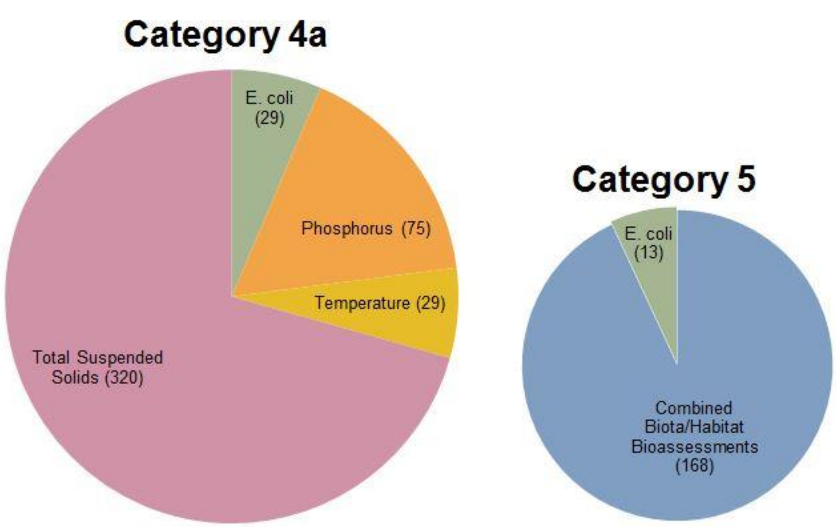

Figure B. Mileage (shown in parentheses) of Category 4a and 5 stream impairments.

Key Findings

The original Lake Walcott TMDL described eight water bodies listed on the 1996 and 1998 §303(d) list of impaired waters (DEQ 2000). The 1996 §303(d) list included six segments: four segments on the Snake River and two on Rock Creek. Marsh Creek was listed on the 1998 §303(d) list beginning at the confluence of Land Creek and continuing to the confluence with the Snake River. These water bodies are considered water quality limited and do not meet their beneficial uses as defined by Idaho's water quality standards. Sediment (i.e., total suspended solids [TSS]) was the most commonly listed pollutant, along with nutrients, dissolved oxygen (DO), pesticides, and oil and grease.

With EPA's approval, *The Lake Walcott Subbasin Assessment, Total Maximum Daily Load, and Implementation Plan* (DEQ 2000) established total phosphorus (TP) load allocations and wasteload allocations for Milner Reservoir between Minidoka Dam and Milner Dam. Other main stem AUs of the Snake River were discussed in the Lake Walcott TMDL but did not receive an approval action by EPA due to lack of beneficial use impairments. The TP target was set as a yearly average of 0.080 milligrams per liter (mg/L) of TP with a maximum of 0.128 mg/L to allow for natural variability. The TP TMDL developed allocations with a goal to reduce TP loads by 37% for Milner Lake and for drains that return to the Snake River. With EPA's approval, the 2000 Lake Walcott TMDL established sediment TMDLs for Rock Creek, East Fork Rock Creek, and South Fork Rock Creek. The sediment TMDLs for the Rock Creek TMDLs established a monthly average target of 50 mg/L TSS and a daily maximum of 80 mg/L TSS for these tributaries. The 2000 Lake Walcott TMDL also developed *Escherichia coli* (*E. coli*), oil and grease, TP, and TSS TMDLs on water bodies with full support of beneficial use. EPA approved only TMDLs in the Lake Walcott subbasin with impaired beneficial uses. This 5-year review refers to water bodies discussed in the 2000 Lake Walcott TMDL where EPA took no approval action as *informational TMDLs*. For more on informational TMDLs, refer to IDAPA 58.01.02.055. When the original 2000 Lake Walcott TMDL was approved, AUs were not used as a numbering system for Idaho water bodies; therefore, TMDLs were approved by water body segments instead of AUs. This TMDL review is based on AUs.

The 2006 Fall Creek and 2007 Rueger Springs Creek TMDLs were developed to establish wasteload allocations for aquaculture facilities. No evidence exists of beneficial use impairment on Fall Creek or Rueger Springs Creek. The waste load allocations in the Fall Creek and Ruger Springs Creek TMDLs were required to meet the goals of the 2000 Lake Walcott TMDL. The Fall Creek TMDL developed TSS and TP wasteload allocations for two point sources (Fall Creek Upper Facility and Fall Creek Lower Facility). The Rueger Springs Creek TMDL developed TSS and TP waste load allocations for one point source (Idaho Department of Fish and Game's American Falls Fish Hatchery). With EPA approval of the Fall Creek TMDL, no changes were made to the §303(d) list, and Fall Creek remains in Category 3 of the Idaho's most recent Integrated Report (DEQ 2018). With EPA approval of the Rueger Springs Creek TMDL, no changes were made to the §303(d) list, and the Snake River AU Rueger Springs Creek remain in Category 3 of the Integrated Report (DEQ 2018).

During the 2012 Lake Walcott subbasin assessment and TMDL 5-year review, DEQ recommended modifying an implementation strategy to incorporate best management practices that specifically target the TMDL parameters for meeting beneficial uses and water quality standards for the Snake River and its tributaries.

The 2013 TMDL developed by DEQ addressed temperature- and bacteria-impaired water bodies in two reaches of Marsh Creek in the Lake Walcott subbasin. These water bodies were listed on the 1998 §303(d) list for unknown pollutants. DEQ determined the only impairments for these reaches are temperature and *E. coli*. *E. coli* can at certain concentrations impact primary and secondary contact recreation. This review did not include temperature, but it will be reviewed at a later date.

This 5-year review analyzes current Category 4a-listed water bodies and AUs with approved TMDLs (Figure C). Table C illustrates all Category 4a-listed water bodies addressed in the review.

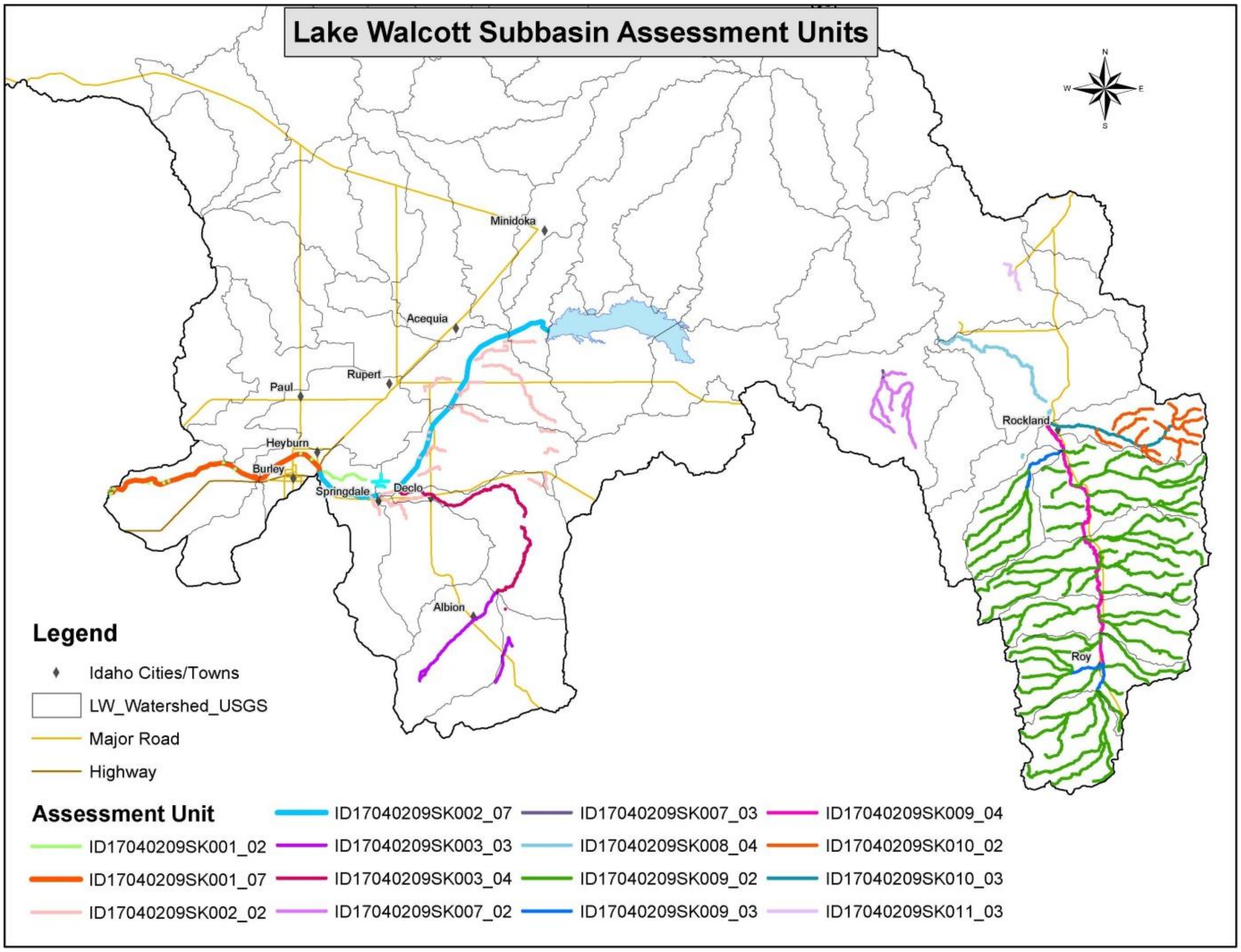

Figure C. Lake Walcott subbasin Category 4a AUs and assessment outcomes.

Table C. Recommendations to the Category 4a AUs in the Lake Walcott subbasin.

Assessment Unit Name	Assessment Unit Number	Pollutant	Recommendation to next Integrated Report	Justification
D16 drain and 2nd-order tributaries to the Snake River	ID17040209SK001_02	TP	Remain in Category 4a	Excess nutrient loads
Snake River—Heyburn/Burley Bridge to Milner Dam	ID17040209SK001_07	TP	Remain in Category 4a	Excess nutrient loads
Duck Creek, Spring Creek, and 2nd-order Snake River tributaries	ID17040209SK002_02	TP	Remain in Category 4a	Excess nutrient loads
Snake River—Minidoka Dam to Heyburn/Burley Bridge	ID17040209SK002_07	TP	Remain in Category 4a	Excess nutrient loads
Marsh Creek—source to mouth	ID17040209SK003_03	Temperature and *E.coli*	Remain in Category 4a	Excess bacteria loads
Marsh Creek—source to mouth	ID17040209SK003_04	Temperature and *E.coli*	Remain in Category 4a	Excess bacteria loads
Rock Creek—lower (Rockland Valley)	ID17040209SK008_04	TSS	Remain in Category 4a	Excess sediment loads
South Fork Rock Creek—source to mouth	ID17040209SK009_02	TSS	Remain in Category 4a	Excess sediment loads
South Fork Rock Creek—source to mouth	ID17040209SK009_03	TSS	Remain in Category 4a	Excess sediment loads
South Fork Rock Creek—source to mouth	ID17040209SK009_04	TSS	Remain in Category 4a	Excess sediment loads
East Fork Rock Creek—source to mouth	ID17040209SK010_02	TSS	Remain in Category 4a	Excess sediment loads
Rock Creek—East Fork (Rockland) source to mouth	ID17040209SK010_03	TSS	Remain in Category 4a	Excess sediment loads

Public Participation

This 5-year review was developed with participation from the Walcott Watershed Advisory Group (WAG). The WAG was consulted on February 21, 2019, and May 9, 2019, about the 5-year review data and report. The Walcott WAG is community based and works collaboratively in the subbasin. DEQ and the Walcott WAG will continue to work together to implement on-the-ground strategies to meet the beneficial use and water quality standards of the Snake River and tributaries in the Lake Walcott subbasin.

1 Introduction

This document reviews the status of water bodies in the Lake Walcott subbasin addressed by *The Lake Walcott Subbasin Assessment, Total Maximum Daily Load, and Implementation Plan* (DEQ 2000) and total maximum daily loads (TMDLs) conducted in 2006, 2007, 2013. This 5-year review evaluates current water quality trends, appropriateness of the TMDL to current watershed conditions, and any available implementation plans.

1.1 Regulatory Requirements

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes, pursuant to CWA §303, are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the nation's waters whenever possible. CWA §303(d) establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list (a "§303(d) list") of impaired waters. For waters identified on this list, states and tribes must develop a TMDL for the pollutants, set at a level to achieve water quality standards.

Idaho Code §39-3611(7) requires a 5-year cyclic review process for Idaho TMDLs:

> The director shall review and reevaluate each TMDL, supporting subbasin assessment, implementation plan(s) and all available data periodically at intervals of no greater than five (5) years. Such reviews shall include the assessments required by section 39-3607, Idaho Code, and an evaluation of the water quality criteria, instream targets, pollutant allocations, assumptions and analyses upon which the TMDL and subbasin assessment were based. If the members of the watershed advisory group, with the concurrence of the basin advisory group, advise the director that the water quality standards, the subbasin assessment, or the implementation plan(s) are not attainable or are inappropriate based upon supporting data, the director shall initiate the process or processes to determine whether to make recommended modifications. The director shall report to the legislature annually the results of such reviews.

Currently, the priority list of impaired waters is published every 2 years as the Category 5 water bodies in Idaho's Integrated Report. The Idaho Department of Environmental Quality (DEQ) monitors waters, and for those not meeting water quality standards, DEQ must establish a TMDL for each pollutant impairing the waters.

Some conditions that impair water quality do not require a TMDL. The US Environmental Protection Agency (EPA) considers certain unnatural conditions such as flow alteration, human-caused lack of flow, or habitat alterations that are not the result of discharging a specific pollutant as "pollution." TMDLs are not required for water bodies impaired by pollution, rather than a specific pollutant. A TMDL is only required when a pollutant can be identified and in some way quantified.

The Lake Walcott TMDL 5-year review considers the most current and applicable information in conformance with Idaho Code §39-3607, evaluates the appropriateness of the TMDL to current watershed conditions, evaluates the implementation plan, and consults with the watershed advisory group (WAG). An evaluation of the recommendations presented is provided. Final decisions for TMDL modifications are decided by the DEQ director. Approval of TMDL modifications is decided by EPA, with consultation by DEQ.

This report reviews the following:

- *The Lake Walcott Subbasin Assessment, Total Maximum Daily Load, and Implementation Plan* (DEQ 2000)
- *The Fall Creek Total Maximum Daily Load (TMDL) of the Lake Walcott Watershed Management Plan* (DEQ 2006)
- *The Rueger Springs Total Maximum Daily Load (TMDL) of the Lake Walcott Watershed Management Plan* (DEQ 2007)
- *Lake Walcott Total Maximum Daily Load 2013 Addendum: Marsh Creek Temperature and E. coli TMDLs* (DEQ 2013)

Water bodies are tracked and assessed using AUs, which are groups of similar streams that have similar land use practices, ownership, or land management. Stream order is the main basis for determining AUs—even if ownership and land use change significantly, an AU remains the same for the same stream order. Using AUs to describe water bodies offers many benefits but primarily all waters of the state are defined consistently. AUs are a subset of water body identification numbers, which allows them to relate directly to the water quality standards. The original TMDL (DEQ 2000) did not use AUs but listed segments of the Snake River. The Integrated Report separated these segments into individual AUs. Table 1 cross references segments with the associated AUs.

Table 1. TMDL segments cross referenced with AUs listed in the Integrated Report.

Assessment Unit Name	Assessment Unit Number	Category in Integrated Report	Segment	Associated TMDL Segment
D16 drain and 2nd-order tributaries to the Snake River	ID170409SK001_02	4a	Heyburn/Burley Bridge to Milner Dam	Minidoka Dam to Milner Dam
Snake River—Heyburn/Burley Bridge to Milner Dam	ID170409SK001_07	4a	Heyburn/Burley Bridge to Milner Dam	Minidoka Dam to Milner Dam
Duck Creek, Spring Creek, and 2nd-order Snake River tributaries	ID170409SK002_02	4a	Minidoka Dam to Heyburn/Burley Bridge	Minidoka Dam to Milner Dam
Snake River—Minidoka Dam to Heyburn/Burley Bridge	ID170409SK002_07	4a	Minidoka Dam to Heyburn/Burley Bridge	Minidoka Dam to Milner Dam
Snake River—Raft River to Lake Walcott	ID170409SK005_07	2	Raft River mouth to Lake Walcott inlet	Massacre Rocks to Lake Walcott
Snake River—Raft River to Lake Walcott	ID170409SK006_07	2	Rock Creek mouth to Raft River mouth	Massacre Rocks to Lake Walcott
Snake River—American Falls Reservoir Dam to Rock Creek	ID170409SK011_07	4c	American Falls Dam to Rock Creek mouth	American Falls Dam to Massacre Rocks

2 TMDL Review and Status

This section reviews the applicable water quality standards, analyzes the AUs in the Lake Walcott subbasin, and provides a summary of existing water quality data. Table 2 shows the TMDL targets for each Category 4a AU in the Lake Walcott subbasin, including TMDL targets for Fall Creek and Rueger Springs Creek (DEQ 2006, 2007). The critical periods considered in the Lake Walcott TMDL were based on three critical flow regimes: high, low, and average flow years. According to the TMDL, “Final load capacity was determined to be the lowest load capacity from this analysis. At this capacity water quality targets would not be exceeded in a worst case basis. Actual daily flow records were used to incorporate day-to-day and seasonal variation in load capacity for the low and high flow regimes” (DEQ 2000). DEQ identified the critical period for temperature impairment of cold water aquatic life and salmonid spawning beneficial use. Since the water quality criteria for cold water aquatic life are not seasonal but year round, the approach is more conservative than using a seasonal approach. Salmonid spawning criteria apply to time frames by species; however, the typical critical months are April and July through October. Temperature exceedances may occur during these months.

Table 2. Applicable TMDLs.

Assessment Unit Name	Assessment Unit Number	Pollutants	Narrative Criteria Target Value	Numeric Criteria	Critical Period	Relevant TMDL
D16 drain and 2nd-order tributaries to the Snake River	ID17040209SK001_02	TP	0.08 mg/L	—-	Low flow	DEQ 2000
Snake River—Heyburn/Burley Bridge to Milner Dam	ID17040209SK001_07	TP	0.08 mg/L	—	Low flow	DEQ 2000
Duck Creek, Spring Creek, and 2nd-order Snake River tributaries	ID17040209SK002_02	TP	0.08 mg/L	—	Low flow	DEQ 2000
Snake River—Minidoka Dam to Heyburn/Burley Bridge	ID17040209SK002_07	TP	0.08 mg/L	—	Low flow	DEQ 2000
Marsh Creek	ID17040209SK003_03	Temperature	—	850,000 kWh/day	Not considered due lack of information	DEQ 2013
		E.coli	—	126 cfu/100 mL		
Marsh Creek	ID17040209SK003_04	Temperature	—	850,000 kWh/day		DEQ 2013
		E.coli	—	126 cfu/100 mL		
Fall Creek	ID17040209SK007_02	TP	0.10 mg/L	—	Low flow	DEQ 2006
		TSS	50.0 mg/L	—		
		E.coli	—	126 cfu/100 mL		
Fall Creek	ID17040209SK007_03	TP	0.10 mg/L	—	Low flow	DEQ 2006
		TSS	50 mg/L	—		
		E.coli	—	126 cfu/100 mL		

Assessment Unit Name	Assessment Unit Number	Pollutants	Narrative Criteria Target Value	Numeric Criteria	Critical Period	Relevant TMDL
Rock Creek—lower	ID17040209SK008_04	TSS	50.0 mg/L	—	Low flow	DEQ 2000
South Fork Rock Creek	ID17040209SK009_02	TSS	50.0 mg/L	—	Low flow	DEQ 2000
	ID17040209SK009_03	TSS	50.0 mg/L	—	Low flow	DEQ 2000
	ID17040209SK009_04	TSS	50.0 mg/L	—	Low flow	DEQ 2000
East Fork Rock Creek	ID17040209SK010_02	TSS	50.0 mg/L	—	Low flow	DEQ 2000
	ID17040209SK010_03	TSS	50.0 mg/L	—	Low flow	DEQ 2000
Rueger Springs Creek	ID17040209SK011_03	TP	0.08 mg/L	—	Low flow	DEQ 2007
		TSS	50.0 mg/L	—		
		E.coli	—	126 cfu/100 mL		

Note: kilowatt (kWh), colony forming unit (cfu), milliliter (mL)

2.1 Pollutant Targets

The Lake Walcott TMDL established instream water quality targets to accomplish the narrative criteria for Idaho's water quality standards (DEQ 2000). When the water quality standards related beneficial use impairment to a narrative standard (e.g., IDAPA 16.01.02.200.03, "Surface waters shall be free from deleterious materials in concentrations that impair beneficial uses"), other sources were consulted to determine appropriate instream water quality targets. The Lake Walcott TMDL established a target of 0.08 mg/L for TP based on an average of the 10-year River Basin Model (0.0728 mg/L TP), the downstream Mid Snake TP TMDL (0.075 mg/L TP), and EPA's Blue Book of recommended concentrations for rivers (0.1 mg/L TP) as described in the Lake Walcott TMDL (DEQ 2000). In the Rock Creek watershed, the Lake Walcott TMDL used a monthly average TSS target of 50 mg/L and a daily maximum TSS target of 80 mg/L. The monthly average TSS target was identified as an appropriate concentration to support a moderate fishery (DEQ 2000).

To make discharges from aquaculture facilities consistent with the original TMDL, the Falls Creek and Rueger Springs Creek TMDLs used the same sediment and TP targets as the 2000 Lake Walcott TMDL. Load capacity estimates for TP and sediment were developed using 0.080 mg/L TP and 50 mg/L TSS, respectively.

The 2013 Marsh Creek TMDL developed bacteria TMDLs using Idaho's numeric water quality standards of 126 *E. coli* units/100 milliliter (mL) (Appendix A). Temperature TMDLs were included in the 2013 March Creek TMDL but are not included in this review. Table 3 lists the instream water quality targets by segments since the TMDL was written in this manner, however AUs are listed for reference.

Table 3. Instream water quality TMDL targets in the Lake Walcott subbasin.

Assessment Unit Name	Assessment Unit Number	TMDL Targets				
		TSS (mg/L)	TP (mg/L)	Oil and Grease (mg/L)	DO (mg/L)	*E. coli* (cfu/100 mL)
Snake River—Heyburn/Burley Bridge to Milner Dam	ID17040209SK001_02 ID17040209SK001_07	25[a,b] 40[a,c]	0.08	5[a,b]	5[a]	126[a]
Snake River—Minidoka Dam to Heyburn/Burley Bridge	ID17040209SK002_02 ID17040209SK002_07	25[a,b] 40[a,c]	0.08	5[a,b]	6[a]	126[a]
Marsh Creek	ID17040209SK003_03 ID17040209SK003_04	—	—	—	6[a]	126
Snake River—Massacre Rock to Lake Walcott	ID17040209SK005_07 ID17040209SK006_07	25[a,b] 40[a,c]	0.08[a]	—	6[a]	126[a]
Fall Creek	ID17040209SK007_02 ID17040209SK007_03	50[b]	0.10	—	—	126
Rock Creek and tributaries	ID17040209SK008_04 ID17040209SK009_02 ID17040209SK009_03 ID17040209SK009_04 ID17040209SK010_02 ID17040209SK010_03	50[b] 80[c]	0.08[a]	—	—	126[a]
Rueger Springs Creek	ID17040209SK011_03	50[b]	0.08	—	—	126
Snake River—American Falls Dam to Massacre Rock	ID17040209SK011_07	25[a,b] 40[a,c]	0.08[a]	—	—	126[a]

a. Refers to an informational TMDLs.
b. monthly average
c. daily maximum average

2.2 Control and Monitoring Points

In 2007, DEQ began routine monitoring in the Lake Walcott subbasin for the Snake River and in 2009 for its tributaries. In 2007, DEQ collected water quality data within the Snake River at six locations starting below American Falls Reservoir and ending at the Milner Dam reach. In conjunction with other agencies, from 2007 to 2013, these data were collected to monitor the turbidity from American Falls Reservoir. From 2009 to 2015, DEQ collected data at 12 tributary monitoring stations, mostly along the Snake River and in the Marsh Creek area.

In 2015, DEQ collaborated with EPA and Tetra Tech to complete a watershed data assessment of the Lake Walcott subbasin. From the *Lake Walcott Final Data Assessment Report* (Tetra Tech 2016), DEQ determined the locations and monitoring data that needed to be collected during the 5-year review. To fill in data gaps existing in the watershed, the monitoring site selection was based on previous DEQ or other agency monitoring locations.

In 2016, DEQ collected data at 20 stations: 2 rivers stations, 14 tributary stations, and 4 lake stations within the Lake Walcott subbasin. The tributary monitoring locations from 2016-2017 were the same monitoring stations as the 2009-2015 tributary data collection, with the addition of Rock Creek (RC-2, SFRC-1, and EFRC-1) stations. The Snake River monitoring locations at LW-4 and ML-2, were near (upstream or downstream) the historical Snake River monitoring locations. Figure 1 shows the 20 monitoring stations where sampling occurred during the 2016–2017 season. Appendix B provides location descriptions.

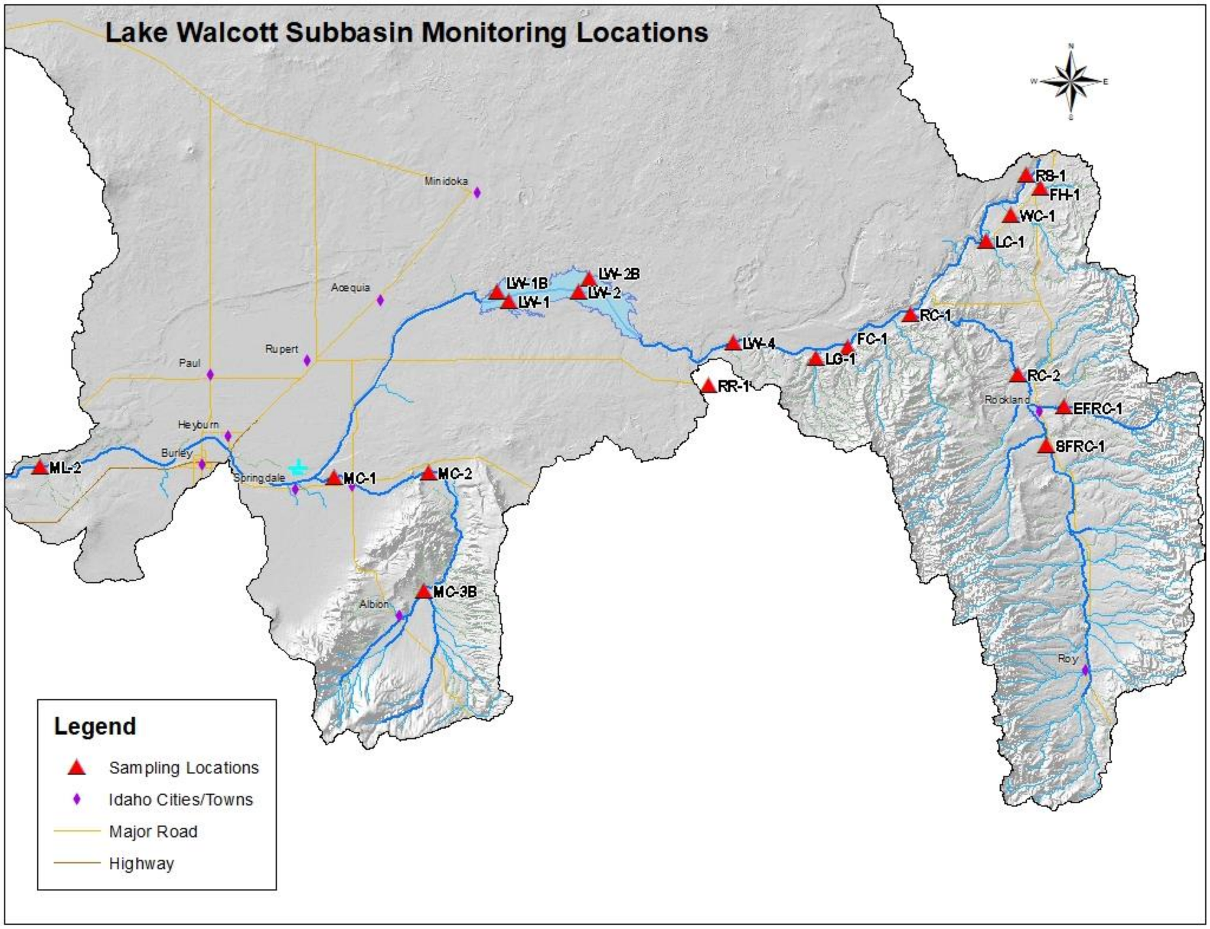

Figure 1. Lake Walcott subbasin water quality monitoring locations.

Three of the tributary monitoring locations (LG-1 and RR-1) had inconsistent data due to seasonal flow. LG-1 was dry during the monitoring events and RR-1 was sampled twice due to flow after precipitation events. The site FH-1 was dry from 2009-2015, thus was not included in this review. Because of resource constraints, monitoring at all 20 locations for nutrients, sediment, and bacteria was inconsistent in 2016 and 2017. Consequently, data gaps exist in the amount of information available to reevaluate the 2000 TMDL.

2.3 Load Capacity

The CWA requires TMDLs to develop load capacities expressed as the greatest amount of pollutant load a water body can carry without violating water quality standards. When TMDLs are developed for pollutants with numeric criteria, load capacity estimates are often developed using the concentration-based numeric criteria. However, numeric water quality standards do not exist for sediment and nutrients. Defined by the rule's narrative standards, numeric instream targets were developed for the Lake Walcott TMDL to determine load capacity. The pollutant targets for sediment and nutrients in the Lake Walcott TMDL were developed based on narrative standards (DEQ 2000).

Under the TMDL process, the load capacity is described with the following formula:

TMDL = Load Capacity = WLA + LA + MOS + BK + FG

where

WLA = wasteload allocation
LA = load allocation
MOS = margin of safety
BK = background
FG = future growth

The load capacities for the three pollutants are as follows:

TP (lb/day) = TP target (mg/L) x flow (cfs) x 5.4
TSS (lb/day) = TSS target (mg/L) x flow (cfs) x 5.4
E. coli (cfu^9) = *E. coli* (cfu/100 mL) x flow (cfs) x 0.02445

Note: The conversion factor of 5.4 used in the load capacity calculation for TP and TSS converts milligram per liter (mg/L) concentrations to pound per day (lb/day) load. The conversion factor of 0.02445 in the load capacity calculation for *E. coli* is used to convert the colony forming unit (cfu/100 mL) concentration to a cfu^9/day load.

The Lake Walcott TMDL explains that excess sediment load capacities were proposed to protect both cold and warm water biota as well as salmonid spawning. The load capacity was based on the mass balance model. The sediment load analysis model for the various segments was derived from mass balance spreadsheets and sediment rating curves developed from linear regression of monitoring data and flow (DEQ 2000). The TSS allocations and load capacities identified for the Snake River in the Lake Walcott TMDL are considered information TMDLs. Informational TMDLs identify desirable conditions to maintain or meet water quality standards. These reaches were not considered impaired by sediment when the TMDL was developed.

The oil and grease load analysis model for the Milner Lake pool segment was derived from mass balance spreadsheets, load capacity determination under three design flows, urban runoff modeling, and historical monitoring data and flow (DEQ 2000). The oil and grease TMDL is informational and was not approved by EPA. Information TMDLs identify desirable conditions to maintain or meet water quality standards.

The TP load analysis model for the Milner Lake pool was derived from a mass balance approach of monitoring data, upstream monitoring, downstream monitoring, source monitoring, and load estimations from that data (DEQ 2000).

The load capacity of the various segments and tributaries in the Lake Walcott subbasin were estimated from the flow records available from US Geological Survey or reconstructed by DEQ using multiple sources. In addition to the flow records, the CWA, Code of Federal regulations, and EPA recommendations and guidelines were used to determine the load capacity. The load capacity is equal to the TMDL so if the load capacity is met through TMDL implementation, it is assumed the concentration targets will be met. Table 4 provides the load summary for the Lake Walcott subbasin.

2.4 Load Allocations

Under the CWA, Congress recognized two sources of pollution: point sources and nonpoint sources. Point source pollution represents wasteload allocations and nonpoint source pollution represents load allocations. The Lake Walcott TMDL (DEQ 2000) allocated allowable loads among different pollutant sources so appropriate control actions could be taken and water quality standards would be achieved. The total pollutant load to the water body was derived from point, nonpoint, margin of safety (MOS), and background sources. The effects of all activities or processes, and all potential sources, not just those water bodies listed on the 1996 §303(d) list were considered. The TMDL allocated a wasteload to point sources with the expectation that the allocation for nonpoint sources would also have load reductions (DEQ 2000).

The TMDL allocations in Fall Creek (DEQ 2006) and Rueger Springs Creek (DEQ 2007) were developed to meet downstream TMDL targets (i.e., Lake Walcott TMDL) for sediment, nutrients, and bacteria (Table 4). Fall Creek and Rueger Springs Creek are not §303(d)-listed water bodies but are described in the 2000 Lake Walcott TMDL as discharging into the Snake River, which is §303(d) listed. Consequently, TMDLs are needed to protect the beneficial uses of the Snake River as part of the Lake Walcott TMDL, as an addition not a modification. These TMDLs established allowable loads to bring aquaculture facilities associated with these two creeks into alignment with National Pollution Discharge Elimination System (NPDES) permits.

The 2013 TMDL addressed temperature- and bacteria-impaired water bodies in two AUs of Marsh Creek. These water bodies were listed on the 1998 §303(d) list for unknown pollutants. DEQ determined the only impairments for these reaches are temperature and *E. coli*. The TMDL for temperature was based on the potential natural vegetation (PNV) approach. Shade targets were established for the two listed AUs in Marsh Creek. The load allocations in PNV TMDLs are based on shade and channel widths that would be expected under natural conditions (i.e., no anthropomorphic impacts) (DEQ 2013). Temperature is not included in this 5-year review.

Table 4. Summary of load allocations for each segment and pollutant in the Lake Walcott subbasin.

Water Body Segment Name	Pollutant	Load Capacity	Waste Load Allocation	Load Allocation	Background	Unallocated Load for Future Growth
Snake River—American Falls to Massacre Rocks	TSS[a] (ton/day)	318	0.418	28.58	110	179
Snake River—Massacre Rocks to Lake Walcott	TSS[a] (ton/day)	329	0	151	76	102
Snake River—Minidoka Dam to Milner Dam	TSS[a] (ton/day)	272	1.701	123.3	84	63
Snake River—Minidoka Dam to Milner Dam	TP (lb/day)	2,452	802	284	1366	0
Snake River—Minidoka Dam to Milner Dam	Oil and grease[a] (ton/day)	54	1	4	34	15
Rock Creek	TSS (ton/day)	4.55	0.01	4.54	0	0
Marsh Creek	*E. coli* (cfu/100 mL)	126	0	107	6	13[b]

a. Refers to an informational TMDLs.
b. Marsh Creek unallocated load for future growth was the MOS in the TMDL.
Sources: DEQ 2000; DEQ 2013

The CWA created the NPDES permit program in 1972 to address water pollution by regulating point sources that discharge pollutants to waters of the United States. In 2018, EPA approved the Idaho Pollutant Discharge Elimination System (IPDES) Program authorizing the transfer of permitting authority to the state. The IPDES program has the same goals as the NPDES program, with Idaho administering the permitting program for discharge of pollutants, including compliance, inspections, and enforcement reviews. Table 5 below provides a summary of discharge permits within the area covered by this review.

Table 5. Summary of permits for Lake Walcott TMDL point sources.

Facility/Permit Name	Permit Number	Permit Expiration Date	Receiving Assessment Unit Number	Waste Load Allocation		
				TP (lb/day)	TSS (mg/L) month limit	*E. coli* (cfu/100 mL) month limit
American Falls Fish Hatchery	IDG130031	6/3/2012	ID17040209SK001_02 ID17040209SK001_03 ID17040209SK001_07	8.6	534.6	—
Burley Industrial WWTP[a]	ID0000663	5/31/2014	ID17040209SK001_07	359	30	—
Burley WWTP	ID0020095	8/31/2023	ID17040209SK001_07	39	30	126
McCain Foods USA	ID0000612	10/31/2019	ID17040209SK001_07	399	30	126
Heyburn WWTP	ID0020940	1/08/2007	ID17040209SK001_07	5	30	126
Fall Creek Hatchery—Upper	IDG130078	6/3/2012	ID17040209SK007_02	6.7	577.8	—
Fall Creek Hatchery—Lower	IDG130085	6/3/2012	ID17040209SK007_02	4.0	672.3	—
Rockland WWTP	ID0022047	1/08/2007	ID17040209SK008_04	—	70	126
American Falls WWTP	ID0020753	7/31/2019	ID17040209SK011_07	—	30	126

a. Simplot transferred NPDES permit ID0000663 to the City of Burley in 2004.
Note: wastewater treatment plant (WWTP)

2.5 Margin of Safety

Under the CWA, a MOS is incorporated into the TMDL to account for "any lack of knowledge concerning the relationship between effluent limitations and water quality." The MOS accounts for uncertainty between the pollutant load and water quality standards.

The Lake Walcott TMDL has an implicit MOS for TP, TSS, and oil and grease that relied on conservative assumptions. The MOS in the Lake Walcott TMDL is combined with background (DEQ 2000). The basis of the implicit MOS is a conservative assumption used to calculate load capacities, wasteload allocations, and load allocations. No explicit MOS was used for any of the pollutant load capacities. This 5-year review of the Lake Walcott TMDL retains the existing MOS as described in the TMDL (DEQ 2000).

2.6 Seasonal Variation

In the Lake Walcott TMDL (DEQ 2000), seasonal variations were considered as follows:

- Ground water
- Prior to the Milner Dam project
- Sediment loads from tributaries
- Sediment and oil and grease pollutants

- Snake River segments

This 5-year review retains the existing seasonality considerations as described in DEQ 2000. Only the city of Rockland received a seasonality consideration in the NPDES permit. Because of the lack of data, seasonal variation was considered but not applied for other point and nonpoint sources.

2.7 Future Growth Reserve

No reserve for growth allocation was made for any EPA-approved TMDL in the Lake Walcott subbasin. The informational TMDLs included an unallocated load for future growth by pollutant (Table 6).

Table 6. Unallocated load for future growth by pollutant.

Segments	Unallocated Load for Future Growth			
	Sediment (ton/day)	Load Capacity (%)	Oil and Grease (ton/day)	Load Capacity (%)
Snake River—American Falls to Massacre Rocks	179	56.3	—	—
Snake River—Massacre Rocks to Lake Walcott	102	31.0	—	—
Snake River—Minidoka Dam to Milner Dam	63	23.2	15	27.8

This 5-year review of the Lake Walcott TMDL does not recommend any changes to the future growth reserve.

2.8 Changes to Subbasin Characteristics

The Lake Walcott subbasin has remained relatively unchanged in land use, landownership, NPDES facilities, and recreational uses throughout the past decade. The only notable change within the subbasin since the TMDL was developed is better BMPs and improved BMP implementation.

3 Beneficial Use Status

Idaho's "Water Quality Standards" (IDAPA 58.01.02) list beneficial uses and set water quality goals for waters of the state. Idaho's water quality standards require that surface waters of the state be protected for beneficial uses, wherever attainable. DEQ's procedure to determine whether a water body fully supports designated and existing beneficial uses is outlined in IDAPA 58.01.02.050.02. These beneficial uses are interpreted as existing uses, designated uses, and presumed uses (*www.deq.idaho.gov/water-quality/surface-water/beneficial-uses*). The procedure relies heavily upon biological parameters presented in the *Water Body Assessment Guidance* (DEQ 2016).

Beneficial uses include the following:

- Aquatic life support—cold water, seasonal cold water, warm water, salmonid spawning, and modified
- Contact recreation—primary (e.g., swimming) or secondary (e.g., boating)

- Water supply—domestic, agricultural, and industrial
- Wildlife habitats
- Aesthetics

3.1 Beneficial Uses

The beneficial uses for the Snake River and its associated tributaries in the Lake Walcott subbasin have not been modified since the original 2000 TMDL and 2006, 2007, and 2013 TMDLs were developed.

Water bodies in the Lake Walcott subbasin are designated and/or have existing uses for salmonid spawning, cold water aquatic life, warm water aquatic life, primary contact recreation, and drinking water, depending on the tributary or reach (Table 7). The remaining undesignated water bodies in the subbasin are protected for presumed beneficial uses of cold water aquatic life and secondary contact recreation. At this time, all beneficial uses appear to be appropriate.

Table 7. Lake Walcott subbasin beneficial uses addressed in the 5-year review.

Assessment Unit Name	Assessment Unit Number	Beneficial Uses	Type of Use
Snake River—Heyburn/Burley Bridge to Milner-Gooding Canal	ID17040209SK001_07	WARM, PCR	Designated
Snake River—Minidoka Dam to Heyburn Bridge	ID17040209SK002_07	COLD, SS, PCR	Designated
Marsh Creek—source to mouth	ID17040209SK003_03	COLD, SS, SCR	Existing
Marsh Creek—source to mouth	ID17040209SK003_04	COLD, SS, SCR	Existing
Lake Walcott (Snake River)	ID17040209SK004_02	COLD, PCR, DWS	Designated
Snake River—Raft River to Lake Walcott	ID17040209SK005_07	COLD, PCR, DWS	Designated
Snake River—Rock Creek to Raft River	ID17040209SK006_02	COLD, PCR, DWS	Designated
Snake River—Rock Creek to Raft River	ID17040209SK006_03	COLD, PCR, DWS	Designated
Snake River—Rock Creek to Raft River	ID17040209SK006_07	COLD, PCR, DWS	Designated
Fall Creek—source of mouth	ID17040209SK007_02	COLD, SCR	Presumed
Fall Creek—source of mouth	ID17040209SK007_03	COLD, SCR	Presumed
Rock Creek —confluence of South and East Forks Rock Creek to mouth	ID17040209SK008_02	COLD, SS, PCR	Designated
Rock Creek —confluence of South and East Forks Rock Creek to mouth	ID17040209SK008_04	COLD, SS, PCR	Designated
South Fork Rock Creek—source to mouth	ID17040209SK009_02	COLD, SCR	Presumed
South Fork Rock Creek—source to mouth	ID17040209SK009_03	COLD, SCR	Presumed
South Fork Rock Creek—source to mouth	ID17040209SK009_04	COLD, SCR	Presumed
East Fork Rock Creek—source to mouth	ID17040209SK010_02	COLD, SCR,	Presumed
East Fork Rock Creek (Rockland) —source to mouth	ID17040209SK010_03	COLD, SS, PCR[a]	Existing
Snake River—American Falls Dam to Rock Creek	ID17040209SK011_03	COLD, PCR, DWS	Designated
Warm Creek—source to mouth	ID17040209SK012_02	COLD, SCR[a]	Existing

a. Presumed
Notes: Warm water aquatic life (WARM), cold water aquatic life (COLD), salmonid spawning (SS), primary contact recreation (PCR), secondary recreation (SCR), domestic water supply (DWS)

Beneficial uses are protected by a set of water quality criteria, which includes *narrative* and *numeric* criteria as described in Section 2.1 “Pollutant Targets.” The Lake Walcott TMDL used instream water quality targets as numeric surrogates for the narrative criteria for TSS, TP, and oil and grease. Some of the numeric criteria (*E. coli*) became the TMDL instream target because the measure was already defined in the water quality standards (Appendix A). The combination of narrative and numeric criteria became the measurement to determine compliance in the Lake Walcott TMDL. The Lake Walcott instream targets are listed in Table 3.

3.2 Summary and Analysis of Current Water Quality Data

3.2.1 Tetra Tech Report

A 2016 subbasin assessment was conducted by Tetra Tech for the Lake Walcott subbasin. This assessment reviewed and evaluated the water quality data collected to date and identified data gaps. The Tetra Tech report concluded the “data suggests the water quality upstream of Lake Walcott and downstream of Lake Walcott is similar, indicating that the major source of nutrient, TSS, and *E. coli* loads in the Snake River is from water discharged at the American Falls Reservoir” (Tetra Tech 2016). The data also suggested the elevated levels of nutrient concentrations at the Milner Lake pool indicate return flows are a contributor of excessive nutrients in the lower section of the Snake River in the Lake Walcott subbasin. The long-term data sets from June 2009 to July 2015 show the nutrient concentrations are static at Fall Creek, Little Creek, Warm Creek, and Rueger Springs Creek (Tetra Tech 2016). However the tributaries at Rock Creek and Marsh Creek show improvement in the long-term data set for nutrients (Tetra Tech 2016) (Table 8).

Table 8. Long-term water quality average TP concentrations in the tributaries.

Sampling Location	First Date	Last Date	TP Mean Value (mg/L)
Rock Creek	8/3/2009	7/13/2015	0.27
Little Creek	6/3/2009	7/13/2015	0.13
Warm Creek	8/3/2009	7/13/2015	0.16
Rueger Springs Creek	6/3/2009	7/13/2015	0.04
Marsh Creek	5/10/2000	9/8/2010	0.12

Tetra Tech made suggestions to DEQ for the 5-year review monitoring plan to help further describe water quality conditions in the subbasin.

3.2.2 2016–2017 DEQ Water Quality Data

Water quality monitoring was conducted at 14 tributary locations along the Snake River, 2 in the Snake River, and 4 in Lake Walcott (Figure 2).

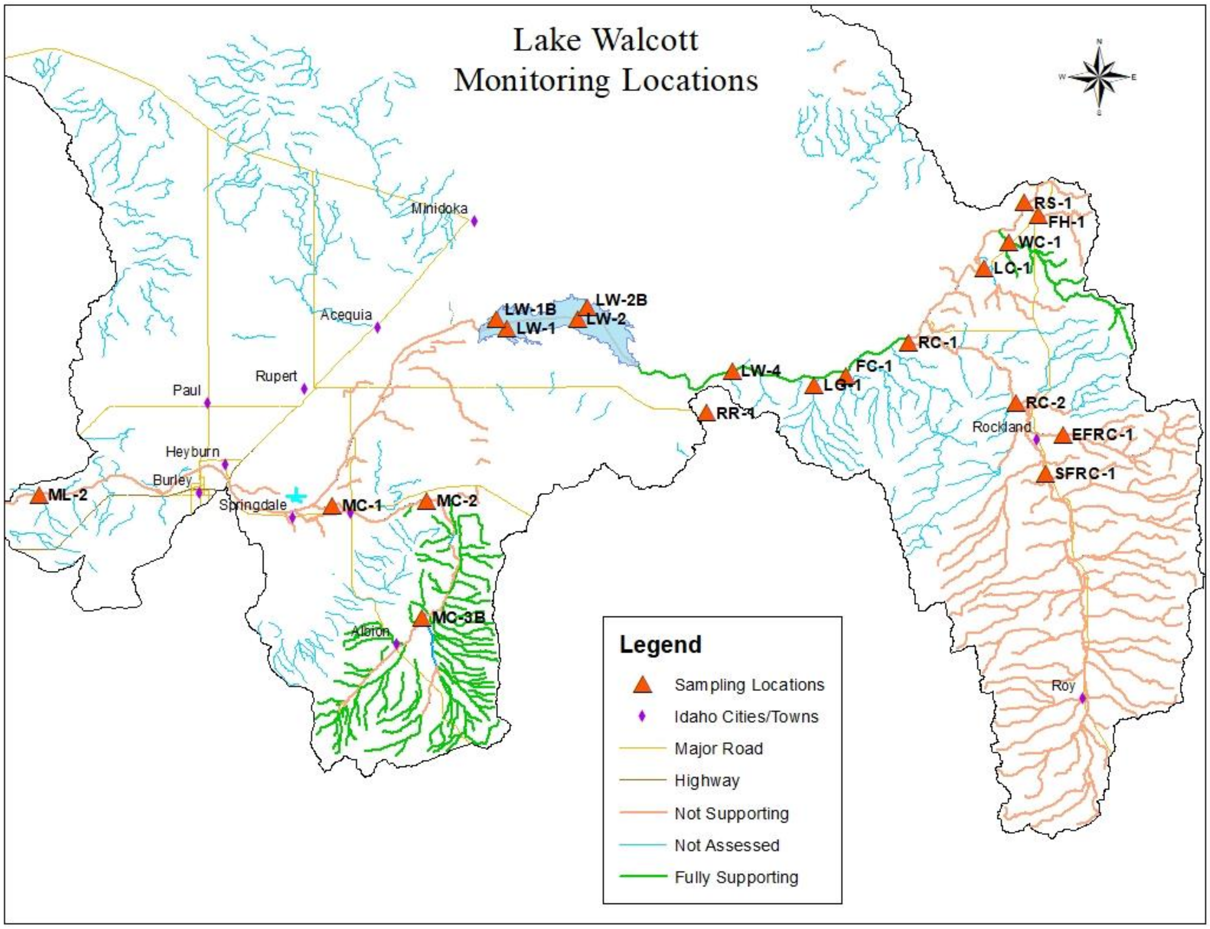

Figure 2. Monitoring locations in the Lake Walcott subbasin.

The historical water quality data in the Snake River, at the lower reach of the subbasin at location ML-2, shows a decreasing trend in average TP (Figure 3). The average TP concentration in 2016 at ML-2 was 0.06 mg/L, below the target of 0.08 mg/L. This historical data from 1993-2008 was monthly monitoring, annually.

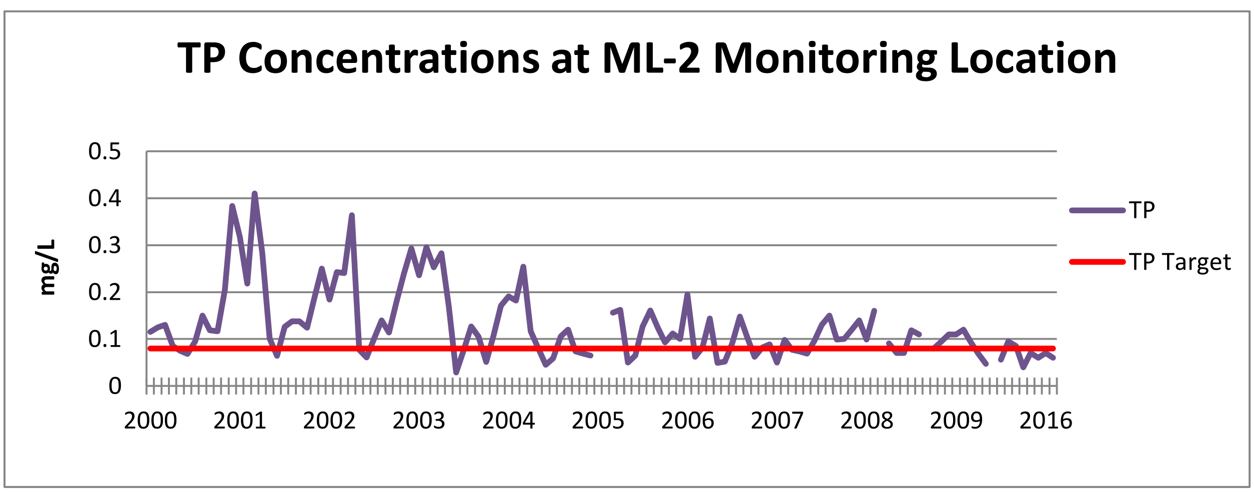

Figure 3. Historical data collected by DEQ for TP at Milner Lake (ML-2) monitoring location.

Additionally, the tributaries to the Snake River show an overall decrease in TP and TSS concentrations, excluding Little Creek tributary. Little Creek showed an increase in average TP, TSS, and *E. coli* concentrations. Rueger Springs Creek was the only tributary showing improvement in *E. coli* samples in 2016. Appendix B provides the 2016 and 2017 water quality data, and Appendix C provides historical water quality trends at these monitoring locations.

3.2.3 Water Quality in the Snake River

In 2016, DEQ collected water quality data (temperature, conductivity, pH, dissolved oxygen [DO], ammonia [NH_3], nitrogen oxides [NOx], total Kjeldahl nitrogen [TKN], TP, TSS, turbidity, and chlorophyll *a*) at six sampling locations in the Snake River. One sampling location was above Lake Walcott, upstream of Raft River confluence (LW-4), one was located in the Milner Lake pool (ML-2) approximately 1.5 miles upstream of the power plant inlets, and four locations were within Lake Walcott (LW-1, LW-1B, LW-2, and LW-2B, Figure 2).

In situ measurements for air and water temperature, conductivity, pH, turbidity, and DO were taken with a calibrated Hydrolab multiparameter sonde. Water chemistry samples analyzed for NOx, NH_3, TKN, phosphate ion, TP, TSS, chlorophyll *a*, and *E. coli* were collected as grab samples.

The average TP in the Snake River during the 2016 sampling was 0.04 mg/L. The TP target is 0.08 mg/L. Average TSS for these monitoring locations was 8.78 mg/L, with a target of 25 mg/L. The individual TP and TSS averages for the Snake River monitored locations are shown in Table 9.

Table 9. Average TP and TSS concentrations in the Snake River.

Site ID	Average TP (mg/L)	Average TSS (mg/L)
LW-4	0.057	14.85
LW-2B	0.040	7.40
LW-2	0.020	2.50
LW-1	0.026	4.50
LW-1B	0.044	7.00
ML-2	0.057	16.40

Figure 4 shows the distribution of the Snake River TP and TSS. Monitoring in the Snake River (ML-2 and LW-4) and in Lake Walcott (LW-1, LW-1B, LW-2, and LW-2B) suggests the TMDL targets for TP and TSS are being met. Additional descriptive statistics concentrations are presented in Appendix B.

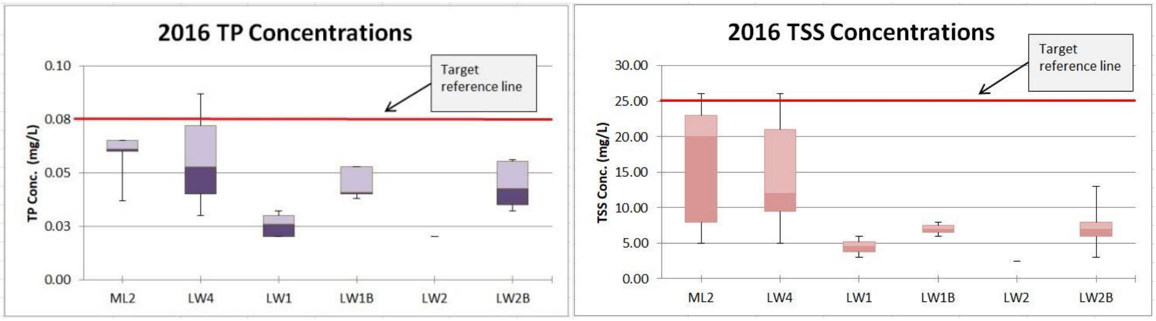

Figure 4. Box and whisker plot of the TP and TSS data.

Chlorophyll *a* is a measure of the amount of algae growing in a water body. The Lake Walcott subbasin does not have an established target for chlorophyll *a*; however, upstream of the subbasin, the American Falls Reservoir has a recommended target concentration of 0.015 mg/L (15 mg/m^3) for American Falls Reservoir in the associated TMDL (DEQ 2012). The average chlorophyll *a* for these monitoring locations was 17.07 mg/m^3, slightly above the target for American Falls Reservoir. Figure 5 and Table 10 show the distribution of the chlorophyll *a* concentrations during the 2016 sampling seasons.

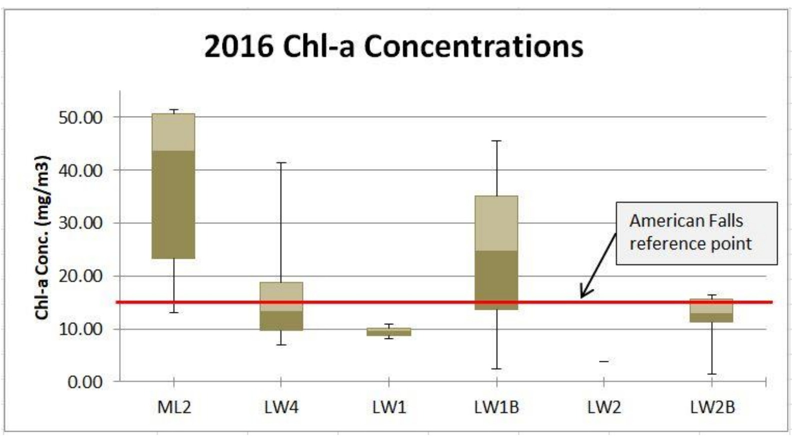

Figure 5. Water quality data for chlorophyll *a* average concentrations.

Table 10. Chlorophyll *a* average concentrations for Lake Walcott monitoring locations.

Site ID	Average Chlorophyll *a* (mg/L)
LW-1	0.026
LW-1B	0.044
LW-2	0.020
LW-2B	0.040
LW-4	0.057
ML-2	0.057

Monitoring locations ML-2 and LW-1B had elevated chlorophyll *a* levels. Although the TP targets are being achieved, the high levels of chlorophyll *a* indicate a nutrient issue still exists.

DO, pH, and temperature depth profiles were conducted during the 2016 sampling season at each of these six locations. DO, pH, and temperature were collected with a Hydroloab multiparameter sonde. Departures from the Idaho's water quality criteria were documented for these three parameters during the seven sampling events from June 1 to October 19 shown in Table 11 below.

Table 11. DO, pH, and temperature criteria departures in the Snake River and Lake Walcott.

Site	Date	DO Departure	pH Departure	Temperature Departure
LW-1	7/27/2016	X	X	X
LW-1	8/15/2016			X
LW-1	8/31/2016		X	
LW-1	10/19/2016		X	
LW-2	7/27/2016		X	X
LW-2	8/15/2016	X		X
LW-2	8/31/2016	X	X	
LW-2	10/19/2016		X	
LW-4	7/27/2016		X	
	8/31/2016		X	
	10/19/2016		X	
ML-2	7/27/2016		X	
	8/31/2016		X	

The surface water quality criteria for aquatic life use designations must meet the general criteria for pH within the range of 6.5–9.0. For cold water aquatic life, the DO shall exceed 6 mg/L at all times, and the water temperature must be 22°C or less with a maximum daily average of no greater than 19°C. For warm water aquatic life, the DO shall exceed 5 mg/L at all times and temperature must be 33°C or less with a maximum daily average of not greater than 29°C.

Due to the low resolution of temperature profile data in this review, it is difficult to determine the boundaries of the epilimnion, where DO criteria apply, and the hypolimnion, where DO criteria do not apply in stratified lakes and reservoirs (IDAPA 58.01.02.276). It is not appropriate to determine beneficial use support from DO data alone. Depth profile data presented in Appendix B provide insight into observed water quality trends.

3.2.4 Water Quality in Lake Walcott Subbasin Tributaries

In the 2016 and 2017 sampling season, DEQ collected TP, TSS, and *E. coli* samples from 12 tributary sampling locations (Figure 2). Average TP for all monitored tributaries in 2016 were 0.150 mg/L, with a target of 0.08 mg/L. TP was not monitored in 2017. Average TSS for all tributary monitoring sites were 56.42 mg/L and 64.01 mg/L in 2016 and 2017, respectively, with a TSS target of 50 mg/L in the tributaries. The *E. coli* average concentrations for 2016 were monthly samples calculated as a geometric mean. Since the 2016 samples were a monthly geometric mean, the number of samples required for a standard geometric mean was not met, and a direct comparison cannot be made, but the data can be used as a reference. The *E. coli* data in 2017 were calculated as a geometric mean as shown in Table 12.

Table 12 summarizes the average concentrations for the 2016–2017 sampling season. The overall trend in the tributaries showed improvement, except for Little Creek, which had increases in TP, TSS, and *E. coli* concentrations. Appendix B summarizes the TP, TSS, and *E. coli* data for the 2016–2017 sampling season.

Table 12. Average concentrations summary for 2016 and 2017 data in the Lake Walcott tributaries.

Station ID	TP (mg/L)	TSS (mg/L)	2016 *E. coli* Geometric Mean (cfu/100 mL)	2017 *E. coli* Geometric Mean (cfu/100 mL)
RS-1	0.04	2.14	8.95	—
WC-1	0.06	97.62	596.53	571.19
LC-1	0.45	140.42	729.31	453.00
RC-1	0.06	11.68	189.83	85.70
RC-2	0.06	23.96	260.81	124.10
EFRC-1	0.05	41.09	254.96	289.47
SFRC-1	0.09	14.19	143.52	72.10
FC-1	0.01	7.75	148.77	124.57
RR-1	0.69	375.50	2,683.28	—
MC-1	0.09	7.36	58.97	—
MC-2	0.16	1.75	6.32	—
MC-3B	0.04	13.08	542.95	—
Average	**0.150**	**61.38**	**468.68**	**245.73**
Target	**0.08**	**50**	**406**	**126**

Raft River (RR-1) tends to be dry for most of the year, except for precipitation events. Two water quality samples were collected in 2016 at RR-1 in May and June. The average pollutant concentrations of the tributaries, excluding RR-1, are TP—0.093 mg/L, TSS—30.09 mg/L, and *E. coli*—267.36 cfu/100 mL. The pollutant concentrations are often higher immediately following a storm event due to watershed wash off.

3.3 Assessment Unit Summary

A summary of the Category 4a AUs assessed during this 5-year review is presented in Table 13. No changes to the subbasin have occurred to support beneficial uses, and no changes to the Integrated Report are recommended as a result of the data collected in this 5-year review.

Table 13. Summary of recommended changes for Category 4a AUs evaluated.

Assessment Unit Name	Assessment Unit Number	Pollutant	Recommended Changes
D16 drain and 2nd-order tributaries to the Snake River	ID17040209SK001_02	TP	No change
Snake River—Heyburn/Burley Bridge to Milner Dam	ID17040209SK001_07	TP	No change
Duck Creek, Spring Creek, and 2nd-order Snake River tributaries	ID17040209SK002_02	TP	No change
Snake River—Minidoka Dam to Heyburn/Burley Bridge	ID17040209SK002_07	TP	No change
Rock Creek—lower (Rockland Valley)	ID17040209SK008_04	TSS	No change
South Fork Rock Creek—source to mouth	ID17040209SK009_02	TSS	No change
South Fork Rock Creek—source to mouth	ID17040209SK009_03	TSS	No change
South Fork Rock Creek—source to mouth	ID17040209SK009_04	TSS	No change

Assessment Unit Name	Assessment Unit Number	Pollutant	Recommended Changes
East Fork Rock Creek—source to mouth	ID17040209SK010_02	TSS	No change
Rock Creek—East Fork (Rockland) source to mouth	ID17040209SK010_03	TSS	No change
Marsh Creek—source to mouth	ID17040209SK003_03	*E.coli*	No change
Marsh Creek—source to mouth	ID17040209SK003_04	*E.coli*	No change

The Rueger Springs Creek TMDL (DEQ 2007) and EPA approval letter had incorrect AUs associated with the segment of the Snake River from American Falls to Rock Creek. The TMDL lists the AUs as ID17040209SK001_02, ID17040209SK001_03, and ID17040209SK001_07. These AUs represent the segment from Heyburn Bridge to Milner Dam; however, EPA's approval letter lists the AUs as ID17040209SK0011_03. AU ID17040209SK011_03 should be the Little Creek tributary. DEQ recommends changing the incorrect AUs listed in the Integrated Report to ID17040209SK011_02, which represents the tributaries along the Snake River from below American Falls Dam to Rock Creek. DEQ also recommends updating ID17040209SK011_07 in the Integrated Report. This AU represents the Snake River from below American Falls Dam to Rock Creek.

3.3.1 Assessment Units in TMDLs Proposed for Delisting

For the Integrated Report, DEQ refers to a delisting as any AU-cause combination that is removed from Category 4 or Category 5. Delisting's must be supported by a detailed rationale. At this time, no AUs are proposed for delisting in the next Integrated Report.

4 Review of Implementation Plan and Activities

The *Lake Walcott Total Maximum Daily Load (TMDL) Agricultural Implementation Plan* (DEQ 2001) was developed to meet the goals of the Lake Walcott TMDL. The implementation plan established goals to reduce the amount of sediment and nutrients from agricultural sources that enter the §303(d)-listed water bodies, including both surface and ground water. The Lake Walcott implementation plan also provided a Resource Management System to monitor the BMP effectiveness. Implementation efforts focused on outreach programs to encourage landowners to participate in improving water quality.

4.1 Accomplished Projects

Since the TMDL (DEQ 2000) and implementation plan (DEQ 2001) were completed, the following projects and programs have supported watershed improvement efforts. The Federal Farm Bill and §319 grant supported implementing private land agriculture and nonpoint source BMPs.

4.1.1 §319 Funded Projects

One §319 grants was awarded to the Lake Walcott subbasin in 2007. This grants focused on the Marsh Creek wetlands restoration project, located in Declo, Idaho along an approximately 16k reach of Marsh Creek. The Marsh Creek wetlands restoration project included construction of four wetland areas with controlled infrastructures. This project aimed to restore water quality and meet beneficial uses by reducing TP by 60%, TSS by 64%, and *E. coli* by 89% of the loads, based on published results of similar projects. The results of this project showed a healthy population of macrophytes and supportive of various migratory waterfowl. This project met all requirements and was successfully closed out in 2016.

4.1.2 Other Funded Projects

The Federal Farm Bill funds the Environmental Quality Incentives Program, Agricultural Water Enhancement Program, and Conservation Cooperative Partnership Initiative Program to support conservation on agricultural lands. In the Lake Walcott subbasin, the Idaho Soil and Water Conservation Commission completed several projects on private agricultural land over the last 5 years through these federally funded programs (Appendix A).

Table 14 provides the BMPs implemented and monitored by the Sawtooth National Forest over the past 5 years.

Table 14. BMPs implemented and monitored by the Sawtooth National Forest Service.

Year	BMP Monitoring	Location
2014	Aquatic ecosystem—Active construction of aquatic ecosystem improvements	One Mile Creek—Minidoka
	Range—Grazing management	Grape Creek—Minidoka
2015	Fire—Use of prescribed fire	Bennett Springs—Minidoka
	Range—Grazing management	Little Cottonwood—Minidoka
	Recreation—Ski run operation and maintenance	Pomerelle Ski Area—Minidoka
2016	Roads—Completed road or water body crossing construction or reconstruction	Johnson Creek (lower)—Minidoka
	Roads—Completed road or water body crossing construction or reconstruction	Johnson Creek (upper)—Minidoka
2017	Range—Grazing management	Lower Grape Creek—Minidoka
2018	Chemical Use—Chemical use near water bodies	Grape Creek Weed Treatment—Minidoka
	Vegetation—Ground-based skidding and harvesting	Badger Gulch—Minidoka

4.2 Planned and Implemented Activities

Water quality implementation projects must continue to reduce nutrient, sediment, and bacteria loads established by the TMDLs. Several agencies implemented projects in the Lake Walcott subbasin and have planned activities to achieve the load reduction goals (Table 15).

Table 15. Designated management agencies and their responsibility for implementing the Lake Walcott TMDLs.

Designated Management Agency	Resource Responsibility
Idaho Soil and Water Conservation Commission	Agriculture
Bureau of Land Management	BLM land, grazing permits
Bureau of Reclamation	Regulatory FERC, monitoring assistance
US Forest Service Department of Agriculture	BMP implementation and monitoring of national forests and grasslands
Idaho Power Company	Regulatory FERC, monitoring assistance
US Fish and Wildlife Services	Minidoka National Wildlife Refuge, ESA
Idaho State Park and Recreation	BMPs
Idaho Department of Lands	State endowment lands, timber harvest, and mining
Idaho Department of Transportation	Roads

Note: Federal Energy Regulatory Commission (FERC); Endangered Species Act (ESA)

The Walcott WAG continues to pursue nonpoint source implementation, including funding from the §319 program. BMPs are still being implemented by various agencies with the goal of restoring water quality and meeting beneficial uses.

4.3 Future Strategy

Idaho Code §39-3621 provides that designated agencies, in cooperation with the appropriate land management agencies, and DEQ shall ensure BMPs are monitored for their effects on water quality. DEQ will work with the agencies to evaluate the monitoring results for their effectiveness in restoring water quality and meeting the beneficial uses.

The future strategy of the Lake Walcott implementation efforts depends on sufficient monitoring and resources and on ground water quality restoration projects. Continuous monitoring on the Snake River will help to attain the data needed to understand the water quality trends and focus improvements in the implementation strategies. DEQ should continue to work collaboratively with other agencies and the Walcott WAG to achieve water quality targets.

4.4 Planned Time Frame

The Lake Walcott subbasin TMDL established short- and long-term goals. Time lines developed are based on pollutants of concern and are industry-specific (DEQ 2000). To the extent practicable, DEQ will continue to follow the time lines and pursue the long-term goals.

5 Conclusion and Recommendations

The Lake Walcott subbasin shows improvement in the Snake River and most of the tributaries. The instream targets in the Snake River comply with the water quality standards. While the water quality of the subbasin has improved over the years and improvement projects have been implemented, instream water quality targets in the tributaries are not meeting the targets established by Phase 2 of the TMDL. TMDL Phase 2 specifies "if the beneficial uses and water quality standards are not being met, then a re-evaluation and re-allocation of more stringent permit limits for point sources will be conducted by USEPA and DEQ. A review of more effective BMPs will be sought, defined, and implemented in the defined critical acres of in those areas that are causing the most damage to water quality by nonpoint sources" (DEQ 2000).

The Lake Walcott tributaries, Marsh Creek, Rock Creek, Little Creek, Warm Creek, and Raft River, will be reevaluated for BMPs effectiveness, and implementation will be reviewed in these areas. Little Creek was the only tributary to decline in water quality; all other tributaries showed improvement. DEQ will work with other agencies in defining the issues and creating a schedule for improving water quality.

The downstream TMDL (Mid Snake TP TMDL) for the Snake River in the Upper Snake Rock subbasin is currently under revision. The current TP target in the Mid Snake TP TMDL is set at 0.075 mg/L (DEQ 1999), which is lower than the Lake Walcott TP target of 0.08 mg/L. After the Mid Snake TP TMDL is revised, DEQ recommends revising the Lake Walcott TP targets to align with targets in downstream segments of the Snake River. DEQ anticipates the Mid Snake TP revision will be completed in 2021. During the next Lake Walcott 5-year review, a more concentrated effort to continuously monitor the Snake River and improve the tributary water quality is recommended.

At this time, DEQ has no recommendations to Category 4a-listed water bodies in the Lake Walcott subbasin.

References Cited

DEQ (Idaho Department of Environmental Quality). 1999. *The Upper Snake Rock Watershed Management Plan: The Upper Snake Rock Subbasin Assessment and The Upper Snake Rock Total Maximum Daily Load.* Twin Falls, ID: DEQ. *https://www.deq.idaho.gov/media/452941-snake_rock_upper_watershed_mgmt_plan_1299.pdf*

DEQ (Idaho Department of Environmental Quality). 2000. *The Lake Walcott Subbasin Assessment, Total Maximum Daily Load, and Implementation Plan.* Twin Falls, ID: DEQ. *http://www.deq.idaho.gov/media/449726-lake_walcott_entire.pdf*

DEQ (Idaho Department of Environmental Quality). 2001. *Lake Walcott Total Maximum Daily Load (TMDL) Agricultural Implementation Plan.* Twin Falls, ID: DEQ. *http://www.deq.idaho.gov/media/449735-lake_walcott_ag_imp_plan.pdf*

DEQ (Idaho Department of Environmental Quality). 2006. *The Fall Creek Total Maximum Daily Load (TMDL) of the Lake Walcott Watershed Management Plan*. Twin Falls, ID: DEQ. *http://www.deq.idaho.gov/media/449729-fall_creek_aquaculture_addendum.pdf*

DEQ (Idaho Department of Environmental Quality). 2007. *The Rueger Springs Total Maximum Daily Load (TMDL) of the Lake Walcott Watershed Management Plan*. Twin Falls, ID: DEQ. *http://www.deq.idaho.gov/media/449732-rueger_springs_creek_aquaculture_addendum.pdf*

DEQ (Idaho Department of Environmental Quality). 2012. *American Falls Subbasin Total Maximum Daily Load Plan: Subbasin Assessment and Loading Analysis.* Pocatello, ID: DEQ. *http://www.deq.idaho.gov/media/843092-american-falls-sba-tmdl-plan-sba-assessment-loading-analysis-0512.pdf*

DEQ (Idaho Department of Environmental Quality). 2013. *Lake Walcott Total Maximum Daily Load 2013 Addendum: Marsh Creek Temperature and E. coli TMDLs*. Twin Falls, ID: DEQ. *http://www.deq.idaho.gov/media/1118344/lake-walcott-tmdl-2013-addendum.pdf*

DEQ (Idaho Department of Environmental Quality). 2016. *Water Body Assessment Guidance.* 3rd ed. Boise, ID: Department of Environmental Quality.

DEQ (Idaho Department of Environmental Quality). 2018. *Idaho's 2016 Integrated Report*. Boise, ID: DEQ. *www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report*.

EPA (United States Environmental Protection Agency). 2018. *Idaho National Pollution Discharge Elimination System (NPDES) Permits. https://www.epa.gov/npdes-permits/idaho-npdes-permits*

Tetra Tech Inc. 2016. *Lake Walcott Final Data Assessment Report*. Atlanta, GA: Tetra Tech, Inc.

US Congress. 1972. Clean Water Act (Federal Water Pollution Control Act). 33 USC §1251–1387.

GIS Coverages

Restriction of liability: Neither the State of Idaho, nor the Department of Environmental Quality, nor any of their employees make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information or data provided. Metadata is provided for all data sets, and no data should be used without first reading and understanding its limitations. The data could include technical inaccuracies or typographical errors. The Department of Environmental Quality may update, modify, or revise the data used at any time, without notice.

USDA – FSA Aerial Photography Field Office- 2013 National Agricultural Imagery Program (NAIP) 0.5 imagery

USDA – FSA Aerial Photography Field Office – 2015 National Agricultural Imagery Program (NAIP) 1.0 imagery

Appendix A. Water Quality Criteria

Table A-1. Selected numeric criteria supportive of designated beneficial uses in Idaho water quality standards.

Parameter	Primary Contact Recreation	Secondary Contact Recreation	Cold Water Aquatic Life	Salmonid Spawning[a]
Water Quality Standards: IDAPA 58.01.02.250–251				
Bacteria				
• Geometric mean	<126 *E. coli*/100 mL[b]	<126 *E. coli*/100 mL	—	—
• Single sample	≤406 *E. coli*/100 mL	≤576 *E. coli*/100 mL	—	—
pH	—	—	Between 6.5 and 9.0	Between 6.5 and 9.5
Dissolved oxygen (DO)	—	—	DO exceeds 6.0 milligrams/liter (mg/L)	**Water Column DO**: DO exceeds 6.0 mg/L in water column or 90% saturation, whichever is greater **Intergravel DO**: DO exceeds 5.0 mg/L for a 1-day minimum and exceeds 6.0 mg/L for a 7-day average
Temperature[c]	—	—	22 °C or less daily maximum; 19 °C or less daily average **Seasonal Cold Water**: Between summer solstice and autumn equinox: 26 °C or less daily maximum; 23 °C or less daily average	13 °C or less daily maximum; 9 °C or less daily average **Bull Trout**: Not to exceed 13 °C maximum weekly maximum temperature over warmest 7-day period, June–August; not to exceed 9 °C daily average in September and October
Turbidity	—	—	Turbidity shall not exceed background by more than 50 nephelometric turbidity units (NTU) instantaneously or more than 25 NTU for more than 10 consecutive days.	—
Ammonia	—	—	Ammonia not to exceed calculated concentration based on pH and temperature.	—
EPA Bull Trout Temperature Criteria: Water Quality Standards for Idaho, 40 CFR 131				
Temperature	—	—	—	7-day moving average of 10 °C or less maximum daily temperature for June–September

[a] During spawning and incubation periods for inhabiting species
[b] *Escherichia coli* per 100 milliliters
[c] Temperature exemption: Exceeding the temperature criteria will not be considered a water quality standard violation when the air temperature exceeds the ninetieth percentile of the 7-day average daily maximum air temperature calculated in yearly series over the historic record measured at the nearest weather reporting station.

Appendix B. Water Quality Data for 2016–2017

Table B-1. Sampling locations, 2016–2017.

2016-2017 Sample Locations			
Site	**Description**	**Latitude**	**Longitude**
ML-2	Milner Lake near Old Pumphouse	42.53400	-113.96839
MC-1	Marsh Creek at 750 East	42.52472	-113.64798
MC-2	Marsh Creek at 6S Ranch Bridge	42.52809	-113.54514
MC-3B	Marsh Creek at 1250 East Road	42.43350	-113.55075
LW-1	Lake Walcott adjacent to State Park	42.66649	-113.45594
LW-1B	Lake Walcott adjacent to State Park	42.67417	-113.46806
LW-2	Lake Walcott adjacent to Bird Island	42.67396	-113.37913
LW-2B	Lake Walcott adjacent to Bird Island	42.68388	-113.36835
LW-4	Lake Walcott at Gifford Springs	42.63145	-113.21044
RR-1	Raft River at I-86 Bridge	42.59736	-113.23836
LG-1	Lanes Gulch at Osborn Loop Road	42.61894	-113.12087
FC-1	Fall Creek at I-86 Bridge	42.62671	-113.08566
RC-1	Rock Creek at Register Rock	42.65282	-113.01675
RC-2	Rock Creek at Halling Road	42.60312	-112.90024
EFRC-1	East Fork Rock Creek at East Fork Road	42.57652	-112.84981
SFRC-1	South Fork Rock Creek at King Lane	42.54530	-112.86944
LC-1	Little Creek at Eagle Rock Road	42.71159	-112.93344
WC-1	Warm Creek at Zaring Road	42.73231	-112.90560
FH-1	Ferry Hollow at Ferry Hollow Road	42.75365	-112.87308
RS-1	Reuger Springs at Control Dam	42.76427	-112.88805
SR-1-ISOFN	Snake River below American Falls	42.77450	-112.87543
SR-2-ISOCM	Snake River at Montgomery Bridge	42.61950	-113.58780

Notes
These sampling sites were established for sampling during the **2016-2017** field season. These sites were identified by DEQ/EPA/Tetratech following a subbasin data assessment for the purpose of informing the need for revising the 2000 Subbasin Assessment (DEQ). Sampling was performed by DEQ-TFRO. Samples were analyzed at the Bureau of Reclamation Lab in Boise. **REFER TO MAP.**

Table B-2. Water quality data in Lake Walcott tributaries for 2016.

Site Code	Date Sampled	Time Sampled	Flow cfs	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3-Diss mg/L	TKN mg/L	Field TDS ppm	E. coli ct/100mL	Chl a mg/m3	TSS mg/L	Field pH SU	Field EC uS/cm	Field Turb NTU	DO %sat	DO mg/L
EF-1	5/23/2016	1:00 PM	6.32	0.37	0.02	0.04	< 0.01	0.18	--	380.00	--	17.00	--	--	--	--	--
EF-1	6/20/2016	1:25 PM	8.75	0.29	0.06	0.08	0.02	0.22	--	800.00	--	16.00	--	--	--	--	--
EF-1	7/18/2016	4:15 PM	8.83	0.32	0.01	0.02	< 0.01	0.09	--	80.00	--	5.00	--	--	--	--	--
EF-1	8/3/2016	3:10 PM	10.68	0.34	0.01	0.03	< 0.01	0.06	--	180.00	--	10.00	--	--	--	--	--
EF-1	8/29/2016	11:55 AM	11.28	0.36	0.01	0.03	< 0.01	0.12	--	200.00	2.20	14.00	8.50	471.00	5.00	--	--
EF-1	9/26/2016	12:40 PM	10.71	0.38	0.02	0.07	0.02	0.54	--	160.00	2.90	44.00	--	--	--	--	--
EF-1	10/17/2016	1:15 PM	10.80	0.34	0.03	0.07	< 0.01	0.25	--	500.00	--	22.00	--	--	--	--	--
FC-1	5/18/2016	1:30 PM	14.23	0.14	0.01	0.02	< 0.01	0.11	--	600.00	--	< 1	--	--	--	--	--
FC-1	6/14/2016	3:05 PM	11.98	0.20	0.00	< 0.01	< 0.01	0.05	--	80.00	--	2.00	--	--	--	--	--
FC-1	7/6/2016	10:30 AM	13.29	0.12	0.01	< 0.01	< 0.01	0.12	--	40.00	--	2.00	--	--	--	--	--
FC-1	8/1/2016	1:45 PM	12.94	0.12	0.01	0.01	< 0.01	0.24	--	200.00	--	4.00	--	--	--	--	--
FC-1	8/24/2016	1:00 PM	13.84	0.24	0.01	< 0.01	< 0.01	< 0.05	--	300.00	0.90	4.00	--	--	--	--	--
FC-1	9/21/2016	12:50 PM	12.62	0.18	0.01	< 0.01	0.01	< 0.05	--	100.00	1.10	2.00	--	--	--	--	--
FC-1	10/11/2016	1:00 PM	14.26	0.22	0.01	0.01	< 0.01	0.10	--	140.00	--	6.00	--	--	--	--	--
LC-1	6/14/2016	2:15 PM	0.08	4.29	0.24	1.40	0.03	1.98	--	3300.00	--	615.00	--	--	--	--	--
LC-1	7/12/2016	12:30 PM	0.73	1.61	0.07	0.23	0.05	0.49	--	1900.00	--	42.00	--	--	--	--	--
LC-1	8/1/2016	11:30 AM	1.93	0.17	0.05	0.17	0.06	0.63	--	300.00	--	55.00	--	--	--	--	--
LC-1	8/24/2016	2:15 PM	1.45	0.14	0.03	0.26	0.01	0.80	--	200.00	16.40	113.00	--	--	--	--	--
LC-1	9/21/2016	1:20 PM	3.83	0.01	0.01	0.19	< 0.01	0.49	--	200.00	11.40	122.00	--	--	--	--	--
LC-1	10/26/2016	1:45 PM	1.04	0.28	0.03	0.43	< 0.01	0.99	--	2000.00	--	237.00	--	--	--	--	--
MC-1	5/18/2016	11:45 AM	16.64	0.06	0.10	0.15	< 0.01	0.52	0.22	120.00	--	9.00	7.56	340.80	13.90	86.80	7.72
MC-1	6/8/2016	1:10 PM	7.14	0.50	0.09	0.11	< 0.01	0.37	0.31	320.00	--	9.00	9.62	482.20	4.00	126.20	11.65
MC-1	6/8/2016	12:50 PM		0.50	0.08	0.11	< 0.01	0.36	--	500.00	--	9.00		--	--	--	--
MC-1	6/27/2016	12:30 PM	8.07	0.63	0.05	0.07	0.02	0.29	0.33	120.00	--	1.00	9.28	514.10	0.00	124.20	10.27
MC-1	8/1/2016	1:20 PM	4.97	1.28	0.06	0.10	< 0.01	0.20	0.37	700.00	--	15.00	9.99	580.10	9.30	99.40	8.66
MC-1	8/24/2016	12:10 PM	4.59	2.27	0.05	0.07	0.02	0.27	0.35	< 100	4.70	8.00	9.66	549.10	0.00	96.10	8.63

Site Code	Date Sampled	Time Sampled	Flow cfs	NO3/NO 2 mg/L	Ortho-P mg/L	TP mg/L	NH3-Diss mg/L	TKN mg/L	Field TDS ppm	E. coli ct/100mL	Chl a mg/m3	TSS mg/L	Field pH SU	Field EC uS/cm	Field Turb NTU	DO %sat	DO mg/L
MC-1	9/21/2016	11:45 AM	6.46	1.02	0.04	0.06	0.01	0.31	0.33	20.00	2.40	3.00	5.69	515.20	0.00	82.00	7.44
MC-1	9/21/2016	1:40 PM		1.03	0.05	0.06	0.02	0.26	--	< 20	2.70	4.00	--	--	--	--	--
MC-1	10/11/2016	1:50 PM	7.46	0.98	0.04	0.06	< 0.01	0.29	0.32	80.00	--	6.00	5.75	506.70	0.00	102.80	9.90
MC-2	5/18/2016	1:55 PM	18.92	< 0.01	0.09	0.13	< 0.01	0.53	0.15	100.00	--	< 1	7.20	236.30	4.90	75.60	6.32
MC-2	5/18/2016	1:30 PM		< 0.01	0.09	0.14	< 0.01	0.57	--	60.00	--	< 1	--	--	--	--	--
MC-2	6/8/2016	2:15 PM	7.39	< 0.01	0.15	0.19	< 0.01	0.56	0.16	< 1	--	3.00	9.40	243.40	0.00	120.40	9.49
MC-3B	5/18/2016	12:30 PM	38.92	0.23	0.03	0.10	< 0.01	0.53	0.10	900.00	--	33.00	7.67	158.30	20.10	93.40	9.29
MC-3B	6/8/2016	12:15 PM	37.08	0.15	0.02	0.11	< 0.01	0.59	0.09	700.00	--	63.00	9.15	135.90	27.00	110.20	11.23
MC-3B	6/27/2016	12:30 PM	5.12	0.03	0.02	0.05	0.01	0.57	0.19	400.00	--	6.00	10.01	291.80	0.00	153.90	11.96
MC-3B	8/1/2016	3:45 PM	1.62	0.02	0.01	0.02	< 0.01	0.23	0.18	300.00	--	2.00	10.69	274.90	0.00	106.60	8.92
MC-3B	8/24/2016	11:00 AM	1.20	0.03	0.01	0.02	< 0.01	0.25	0.16	800.00	3.20	4.00	10.51	244.10	0.00	112.20	10.10
MC-3B	9/21/2016	10:20 AM	0.86	< 0.01	0.01	0.04	< 0.01	0.31	0.18	2300.00	4.40	3.00	6.13	274.90	0.00	90.80	8.10
MC-3B	10/11/2016	10:50 AM	2.45	< 0.01	0.01	0.02	< 0.01	0.24	0.17	100.00	--	< 1	6.98	258.50	0.00	141.40	13.82
RC-1	5/23/2016	10:45 AM	2.00	0.31	0.01	0.01	< 0.01	0.28	--	60.00	--	2.00	--	--	--	--	--
RC-1	6/20/2016	11:20 AM	0.43	0.09	0.01	0.043 !	< 0.01	0.52!	--	8.00	--	4.00	--	--	--	--	--
RC-1	6/20/2016	10:00 AM		0.09	0.01	0.020 !	< 0.01	0.39 !	--	12.00	--	3.00	--	--	--	--	--
RC-1	7/18/2016	10:20 AM	2.04	0.84	0.00	0.03	< 0.01	0.59	--	5000.00	--	12.00	--	--	--	--	--
RC-1	8/29/2016	10:45 AM	0.04	0.02	0.01	0.03	0.02	0.55	--	600.00	1.50	5.00	8.30	1002.00	4.00	--	--
RC-1	9/26/2016	10:55 AM	8.21	0.63	0.06	0.09	0.04	0.39	--	100.00	3.40	12.00	--	--	--	--	--
RC-1	10/17/2016	10:45 AM	16.09	0.51	0.06	0.12	< 0.01	0.48	--	260.00	--	48.00	--	--	--	--	--
RC-2	5/23/2016	9:30 AM	2.66	0.56	0.04	0.06	0.01	0.31	--	1000.00	--	6.00	--	--	--	--	--
RC-2	6/20/2016	10:05 AM	1.81	0.34	0.01	0.03	0.02	0.47	--	3000.00	--	4.00	--	--	--	--	--
RC-2	7/18/2016	9:50 AM	0.88	0.70	0.02	0.04	0.02	0.28	--	< 100	--	3.00	--	--	--	--	--
RC-2	8/3/2016	10:00 AM	0.77	1.26	0.03	0.04	0.04	0.15	--	360.00	--	1.00	--	--	--	--	--
RC-2	8/29/2016	10:35 AM	1.49	1.08	0.02	0.04	0.02	0.22	--	200.00	5.40	4.00	8.20	936.00	2.00	--	--

Site Code	Date Sampled	Time Sampled	Flow cfs	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3-Diss mg/L	TKN mg/L	Field TDS ppm	E. coli ct/100mL	Chl a mg/m3	TSS mg/L	Field pH SU	Field EC uS/cm	Field Turb NTU	DO %sat	DO mg/L
RC-2	9/26/2016	12:40 PM	7.87	0.68	0.03	0.05	0.01	0.25	--	200.00	2.20	8.00	--	--	--	--	--
RC-2	10/17/2016	12:50 PM	9.50	0.48	0.10	0.18	0.02	0.69	--	3800.00	7.30	31.00	--	--	--	--	--
RR-1	5/18/2016	2:35 PM	0.43	0.21	0.12	0.52	0.19	1.80	0.13	1800.00	--	193.00	7.52	207.80	213.70	79.00	6.00
RR-1	6/8/2016	11:35 AM	8.27	0.11	0.07	0.86	0.04	2.06	0.13	4000.00	6.00	558.00	9.52	199.70	390.30	90.50	7.15
RS-1	5/23/2016	1:00 PM	21.04	2.14	0.02	0.04	0.02	< 0.05	--	4.00	--	< 1	--	--	--	--	--
RS-1	6/14/2016	1:30 PM	20.89	2.09	0.03	0.04	0.01	0.16	--	< 4	--	1.00	--	--	--	--	--
RS-1	7/12/2016	10:45 AM	22.32	4.05	0.03	0.03	0.02	< 0.05	--	40.00	--	1.00	--	--	--	--	--
RS-1	8/3/2016	11:10 AM	20.90	1.92	0.03	0.04	0.03	0.09	--	6.00	--	< 1	--	--	--	--	--
RS-1	8/24/2016	11:00 AM	19.97	1.97	0.03	0.04	0.05	0.17	--	20.00	0.90	4.00	--	--	--	--	--
RS-1	9/21/2016	1:10 PM	21.71	1.96	0.02	0.03	0.04	< 0.05	--	12.00	1.00	6.00	--	--	--	--	--
RS-1	10/26/2016	11:03 AM	20.65	2.14	0.03	0.03	0.04	0.13	--	10.00	--	2.00	--	--	--	--	--
SF-1	6/20/2016	4:00 PM	0.81	0.11	0.01	0.04	< 0.01	0.38	--	700.00	--	8.00	--	--	--	--	--
SF-1	7/18/2016	3:00 PM	0.93	0.45	0.02	0.05	0.04	0.24	--	140.00	--	11.00	--	--	--	--	--
SF-1	8/3/2016	4:50 PM	1.15	0.49	0.04	0.06	0.06	0.19	--	80.00	--	9.00	--	--	--	--	--
SF-1	8/29/2016	5:30 PM	1.02	0.68	0.03	0.06	0.03	0.17	--	40.00	2.90	11.00	8.10	929.00	8.00	--	--
SF-1	9/26/2016	3:00 PM	0.05	0.50	0.07	0.10	0.02	0.37	--	40.00	3.10	13.00	--	--	--	--	--
SF-1	10/17/2016	2:50 PM	0.16	0.49	0.20	0.24	0.13	0.66	--	100.00	--	20.00	--	--	--	--	--
SF-1	5/23/2016	3:30 PM	0.44	0.29	0.08	0.14	0.07	0.54	--	1000.00	--	23.00	--	--	--	--	--
WC-1	5/23/2016	10:50 AM	1.24	0.95	0.04	0.12	0.01	0.26	--	200.00	--	53.00	--	--	--	--	--
WC-1	6/14/2016	11:15 AM	1.11	0.53	0.02	0.04	< 0.01	0.27	--	600.00	2.20	13.00	--	--	--	--	--
WC-1	7/6/2016	11:25 AM	0.83	0.41	0.01	0.03	< 0.01	0.13	--	300.00	1.70	9.00	--	--	--	--	--
WC-1	7/6/2016	11:00 AM		0.41	0.01	0.03	< 0.01	0.14	--	500.00	1.50	10.00	--	--	--	--	--
WC-1	8/3/2016	10:50 AM	0.84	0.48	0.02	0.03	0.01	0.06	--	3500.00	0.80	5.00	--	--	--	--	--
WC-1	8/24/2016	11:20 AM	0.80	0.40	0.01	0.02	< 0.01	0.14	--	800.00	1.10	9.00	--	--	--	--	--
WC-1	9/21/2016	10:40 AM	1.29	0.38	0.01	0.06	0.01	0.17	--	100.00	3.10	37.00	--	--	--	--	--
WC-1	10/26/2016	12:10 PM	3.26	0.42	0.04	0.14	0.02	0.66	--	2000.00	4.70	47.00	--	--	--	--	--

Table B-3. Water quality data in the Lake Walcott subbasin tributaries for 2017.

Site Code	Date Sampled	Time	Flow cfs	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3 mg/L	TKN mg/L	E. coli, MPN/100 mL	Tot. coli, MPN/100 mL	TSS mg/L
EFRC1	3/28/2017	12:45 PM	19.690	--	--	--	--	--	13.40	1046.20	60.00
EFRC1	4/4/2017	12:00 PM	21.000	--	--	--	--	--	770.10	2419.60	82.00
EFRC1	4/11/2017	12:00 PM	21.360	--	--	--	--	--	60.20	344.80	54.00
EFRC1	4/18/2017	12:30 PM	24.060	--	--	--	--	--	275.50	1046.20	68.00
EFRC1	4/25/2017	12:00 PM	--	--	--	--	--	--	142.10	816.40	52.00
EFRC1	5/2/2017	12:30 PM	25.160	--	--	--	--	--	1119.90	1413.60	93.00
EFRC1	5/9/2017	12:30 PM	20.390	--	--	--	--	--	105.00	488.40	68.00
EFRC1	5/16/2017	12:30 PM	17.850	--	--	--	--	--	44.80	1732.90	40.00
EFRC1	5/22/2017	1:30 PM	14.680	--	--	--	--	--	1986.30	>2419.6	58.00
EFRC1	5/16/2017	12:35 PM	--	--	--	--	--	--	41.00	378.40	38.00
EFRC1	5/16/2017	1:05 PM	--	--	--	--	--	--	<1	--	<5.0
FC1	3/28/2017	11:10 AM	22.730	--	--	--	--	--	42.00	1553.10	<5.0
FC1	4/4/2017	10:35 AM	20.420	--	--	--	--	--	62.30	>2419.6	6.50
FC1	4/11/2017	10:35 AM	21.860	--	--	--	--	--	48.00	2419.60	24.00
FC1	4/18/2017	11:00 AM	17.520	--	--	--	--	--	111.20	1553.10	18.00
FC1	4/25/2017	10:30 AM	--	--	--	--	--	--	100.00	--	11.00
FC1	5/2/2017	11:00 AM	52.670*	--	--	--	--	--	60.00	--	6.50
FC1	5/9/2017	11:00 AM	30.730	--	--	--	--	--	100.00	--	16.00
FC1	5/16/2017	11:00 AM	21.710	--	--	--	--	--	1000.00	--	9.50
FC1	5/22/2017	12:00 PM	22.780	--	--	--	--	--	<100	--	9.00
FC1	4/11/2017	10:40 AM	--	--	--	--	--	--	25.60	1553.10	22.00
FC1	4/11/2017	11:20 AM	--	--	--	--	--	--	<1.0	<1.0	<5.0
FC1	5/9/2017	11:05 AM	--	--	--	--	--	--	100.00	--	19.00
FC1	5/9/2017	1:05 PM	--	--	--	--	--	--	3.00	--	<5.0
LC1B	6/6/2017	1:00 PM	0.208	--	--	--	--	--	488.40	>2419.6	30.00
LC1B	6/13/2017	1:00 PM	3.228	--	--	--	--	--	1046.20	>2419.6	55.00

Site Code	Date Sampled	Time	Flow cfs	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3 mg/L	TKN mg/L	E. coli, MPN/100 mL	Tot. coli, MPN/100 mL	TSS mg/L
LC1B	6/20/2017	2:50 PM	0.948	--	--	--	--	--	1046.20	>2419.6	26.00
LC1B	6/26/2017	2:00 PM	1.726	--	--	--	--	--	866.40	>2419.6	71.00
LC1B	8/22/2017	9:00 AM	2.030	--	--	--	--	--	770.10	>2419.6	100.00
LC1B	8/29/2017	11:40 AM	0.337	--	--	--	--	--	290.90	>2419.6	290.00
LC1B	9/5/2017	12:00 PM	1.853	--	--	--	--	--	1413.60	>2419.6	49.00
LC1B	9/12/2017	1:20 PM	5.454	--	--	--	--	--	grabbed	grabbed	grabbed
LC1B	9/19/2017	11:00 AM	4.123	--	--	--	--	--	grabbed	grabbed	grabbed
LC1B	9/26/2017	12:30 PM	0.060	--	--	--	--	--	grabbed	grabbed	grabbed
RC1	6/6/2017	12:20 PM	7.622	--	--	--	--	--	156.50	1986.30	6.00
RC1	6/13/2017	12:30 PM	7.078	--	--	--	--	--	108.60	1203.30	<5.0
RC1	6/20/2017	2:20 PM	17.620	--	--	--	--	--	325.50	2419.60	<5.0
RC1	8/22/2017	9:40 AM	8.536	--	--	--	--	--	32.30	>2419.6	<5.0
RC1	8/29/2017	11:00 AM	8.409	--	--	--	--	--	36.40	>2419.6	5.00
RC1	9/5/2017	12:40 PM	10.310	--	--	--	--	--	27.50	>2419.6	<5.0
RC1	9/12/2017	2:00 PM	10.930	--	--	--	--	--	grabbed	grabbed	grabbed
RC1	9/19/2017	10:30 AM	11.230	--	--	--	--	--	grabbed	grabbed	grabbed
RC1	9/26/2017	12:00 PM	27.400	--	--	--	--	--	grabbed	grabbed	grabbed
RC2	3/28/2017	12:00 PM	36.480	--	--	--	--	--	24.30	1119.90	42.00
RC2	4/4/2017	11:10 AM	38.010	--	--	--	--	--	30.90	517.20	44.00
RC2	4/11/2017	11:10 AM	37.980	--	--	--	--	--	17.10	461.10	37.00
RC2	4/18/2017	11:30 AM	39.320	--	--	--	--	--	79.40	1203.30	27.00
RC2	4/25/2017	11:00 AM	--	--	--	--	--	--	85.70	>2419.6	34.00
RC2	5/2/2017	11:30 AM	39.090	--	--	--	--	--	71.20	517.20	40.00
RC2	5/9/2017	11:30 AM	40.810	--	--	--	--	--	117.80	488.40	65.00
RC2	5/16/2017	11:30 AM	24.980	--	--	--	--	--	88.80	1119.90	37.00
RC2	5/22/2017	12:30 PM	13.310	--	--	--	--	--	461.10	>2419.6	32.00
RC2	4/18/2017	11:35 AM	--	--	--	--	--	--	105.00	1119.90	20.00

Site Code	Date Sampled	Time	Flow cfs	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3 mg/L	TKN mg/L	E. coli, MPN/100 mL	Tot. coli, MPN/100 mL	TSS mg/L
RR1	3/28/2017	10:40 AM	--	--	--	--	--	--	344.80	>2419.6	150.00
RR1	3/28/2017	11:20 AM	--	--	--	--	--	--	<1.0	<1.0	<5.0
RR1	5/2/2017	10:35 AM	--	--	--	--	--	--	280.00	--	130.00
RR1	5/2/2017	1:05 PM	--	--	--	--	--	--	<1.0	--	<5.0
SFRC1	3/28/2017	12:25 PM	10.310	--	--	--	--	--	21.60	920.80	21.00
SFRC1	4/4/2017	11:40 AM	8.310	--	--	--	--	--	3.10	201.40	28.00
SFRC1	4/11/2017	11:40 AM	12.540	--	--	--	--	--	3.10	248.10	15.00
SFRC1	4/18/2017	12:00 PM	10.890	--	--	--	--	--	8.50	980.40	6.50
SFRC1	4/25/2017	11:30 AM	--	--	--	--	--	--	27.50	>2419.6	14.00
SFRC1	5/2/2017	12:00 PM	10.400	--	--	--	--	--	28.20	>2419.6	22.00
SFRC1	5/9/2017	12:00 PM	9.791	--	--	--	--	--	36.40	261.30	18.00
SFRC1	5/16/2017	12:00 PM	7.985	--	--	--	--	--	28.50	1986.30	16.00
SFRC1	5/22/2017	1:00 PM	0.513	--	--	--	--	--	2419.60	>2419.6	11.00
SFRC1	4/4/2017	11:35 AM	--	--	--	--	--	--	3.10	285.10	29.00
WC1	3/28/2017	1:30 PM	5.053	--	--	--	--	--	228.20	>2419.6	200.00
WC1	4/4/2017	12:30 PM	5.293	--	--	--	--	--	209.80	>2419.6	210.00
WC1	4/11/2017	12:30 PM	4.194	--	--	--	--	--	365.40	>2419.6	200.00
WC1	4/18/2017	1:00 PM	4.908	--	--	--	--	--	325.50	>2419.6	190.00
WC1	4/25/2017	12:30 PM	--	--	--	--	--	--	800.00	--	230.00
WC1	5/2/2017	1:00 PM	4.747	--	--	--	--	--	100.00	--	230.00
WC1	5/9/2017	1:00 PM	3.368	--	--	--	--	--	1900.00	--	150.00
WC1	5/16/2017	1:00 PM	2.757	--	--	--	--	--	1000.00	--	44.00
WC1	5/22/2017	2:00 PM	3.452	--	--	--	--	--	400.00	--	80.00
WC1	4/25/2017	12:35 PM	--	--	--	--	--	--	500.00	--	--
WC1	4/25/2017	12:40 PM	--	--	--	--	--	--	<1.0	<1.0	<5.0
WC1	5/22/2017	2:05 PM	--	--	--	--	--	--	600.00	--	--
WC1	5/22/2017	2:07 PM	--	--	--	--	--	--	<1	--	--

Table B-4. Water quality data in the Snake River and in Lake Walcott.

Site Code	Date Sampled	Time Sampled	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3-Diss mg/L	TKN mg/L	Field TDS ppm	E. coli ct/100mL	Chl a mg/m3	TSS mg/L	Field pH SU	Field EC uS/cm	Field Turb NTU	DO %sat	DO mg/L	Depth (m)
LW-1	6/1/2016	1:10 PM	0.18	0.01	0.03	0.08	0.37	0.29	< 1	1.80	3.00	7.92	452.90	1.30	77.00	6.77	4.00
LW-1	6/22/2016	12:50 PM	0.08	0.00	0.02	0.02	0.31	0.28	< 4	8.10	3.00	8.81	436.10	0.00	103.00	8.39	3.00
LW-1	7/27/2016	12:30 PM	0.01	0.01	0.03	< 0.01	0.28	0.28	< 2	10.90	6.00	11.02	437.50	0.00	83.00	6.47	8.00
LW-1B	8/15/2016	1:20 PM	< 0.01	0.01	0.05	0.01	0.70	0.26	< 4	45.60	7.00	n/d	399.70	0.00	128.40	9.98	5.00
LW-1B	8/31/2016	12:10 PM	0.01	0.01	0.04	0.02	0.43	0.24	4.00	24.70	8.00	11.10	380.10	0.50	92.50	7.36	5.00
LW-1B	10/19/2016	11:45 AM	0.11	0.02	0.04	0.12	0.39	0.26	18.00	2.50	6.00	6.42	404.40	0.10	82.80	8.10	5.00
LW-2	6/1/2016	1:40 PM	0.16	< 0.003	0.02	0.05	0.34	0.29	< 1	3.80	2.00	8.02	451.50	0.10	84.20	7.26	2.00
LW-2	6/1/2016	1:50 PM	0.15	< 0.003	0.02	0.05	0.30	--	< 1	3.70	3.00	--	--	--	--	--	--
LW-2B	6/22/2016	1:55 PM	0.09	0.01	0.03	0.02	0.33	0.28	< 4	11.40	3.00	8.94	433.10	0.00	113.30	9.18	4.50
LW-2B	7/27/2016	1:30 PM	0.03	0.01	0.04	< 0.01	0.29	0.28	< 2	12.80	7.00	10.86	432.50	0.00	92.30	7.14	5.00
LW-2B	8/15/2016	2:15 PM	0.12	0.01	0.06	0.08	0.48	0.25	2.00	16.40	8.00	n/d	398.60	2.00	104.40	8.05	5.00
LW-2B	8/31/2016	12:30 PM	0.03	0.01	0.06	0.08	0.49	0.24	< 4	15.70	13.00	11.27	372.00	5.80	120.10	9.59	5.00
LW-2B	10/19/2016	12:15 PM	0.13	0.02	0.04	0.15	0.40	0.26	2.00	1.30	6.00	6.38	407.80	0.50	82.20	8.14	5.00
LW-2B	10/19/2016	12:30 PM	0.13	0.02	0.04	0.15	0.41	--	< 2	1.60	6.00	--	--	--	--	--	--
LW-4	6/1/2016	3:45 PM	0.19	< 0.003	0.03	0.01	0.33	0.29	< 1	9.00	7.00	7.90	449.50	4.60	87.10	7.76	4.00
LW-4	6/22/2016	11:00 AM	0.12	0.02	0.05	0.06	0.37	0.28	< 4	6.90	12.00	8.70	435.90	1.60	96.80	7.90	5.00
LW-4	7/27/2016	10:20 AM	0.03	0.01	0.06	< 0.01	0.48	0.27	2.00	18.90	22.00	10.76	421.90	10.90	91.30	7.10	4.00
LW-4	8/15/2016	10:50 AM	0.22	0.03	0.08	0.16	0.53	0.25	20.00	10.50	20.00	n/d	396.60	12.20	76.90	6.11	5.00

Site Code	Date Sampled	Time Sampled	NO3/NO2 mg/L	Ortho-P mg/L	TP mg/L	NH3-Diss mg/L	TKN mg/L	Field TDS ppm	E. coli ct/100mL	Chl a mg/m3	TSS mg/L	Field pH SU	Field EC uS/cm	Field Turb NTU	DO %sat	DO mg/L	Depth (m)
LW-4	8/31/2016	10:45 AM	0.07	0.01	0.09	0.04	0.64	0.24	< 4	41.50	26.00	10.96	381.70	19.90	82.20	6.62	5.00
LW-4	10/3/2016	11:20 AM	0.02	0.01	0.03	0.04	0.36	0.26	4.00	13.30	5.00	6.76	408.20	23.70	85.00	7.68	4.00
LW-4	10/19/2016	10:00 AM	0.23	0.01	0.05	0.04	0.37	0.27	2.00	18.60	12.00	6.51	421.30	7.00	82.80	8.28	5.00
ML-2	6/1/2016	11:03 AM	0.27	0.01	0.04	0.04	0.34	0.29	< 1	10.90	8.00	7.95	457.80	6.60		7.44	8.00
ML-2	6/22/2016	4:00 PM	0.18	0.01	0.04	< 0.01	0.33	0.28	12.00	13.00	8.00	8.87	443.40	0.00		8.93	5.00
ML-2	7/27/2016	3:00 PM	0.04	0.01	0.07	< 0.01	0.61	0.28	2.00	43.60	23.00	11.07	440.20	16.30		10.07	8.00
ML-2	8/15/2016	4:50 PM	0.01	0.00	0.06	< 0.01	0.65	0.26	120.00	52.50	22.00	n/d	409.70	9.10		11.02	7.00
ML-2	8/15/2016	5:30 PM	< 0.01	0.00	0.06	< 0.01	0.64	--	80.00	50.50	18.00	--	--	--	--	--	--
ML-2	8/31/2016	3:00 PM	0.01	0.01	0.07	< 0.01	0.69	0.25	40.00	50.60	26.00	11.39	384.00	6.30		11.15	7.00
ML-2	10/19/2016	2:50 PM	0.45	0.02	0.06	< 0.01	0.42	0.27	< 2	23.40	5.00	6.84	425.60	0.00	111.20	11.01	5.00

Table B-5. Snake River and Lake Walcott data summary for the box and whisker plots.

TP (mg/L)	ML-2	LW-4	LW-1	LW-1B	LW-2	LW-2B
Average	0.06	0.06	0.03	0.04	0.02	0.04
Min	0.037	0.030	0.020	0.038	0.020	0.032
Medium	0.061	0.053	0.026	0.041	0.020	0.043
Max	0.065	0.087	0.032	0.053	0.020	0.056
Range	0.037–0.065	0.03–0.087	0.02–0.032	0.038–0.053	0.02	0.032–0.056
Number Of Samples	5	7	2	3	1	5
TSS (mg/L)	**ML-2**	**LW-4**	**LW-1**	**LW-1B**	**LW-2**	**LW-2B**
Average	16.40	14.86	4.50	7.00	2.50	7.40
Min	5.00	5.00	3.00	6.00	2.50	3.00
Medium	20.00	12.00	4.50	7.00	2.50	7.00
Max	26.00	26.00	6.00	8.00	2.50	13.00
Range	5.00–26.00	5.00–26	3.00–6.00	6.00–8.00	2.50	3.00–13.00
Number Of Samples	5	7	2	3	1	5
***E. Coli* (cfu/100 ML)**	**ML-2**	**LW-4**	**LW-1**	**LW-1B**	**LW-2**	**LW-2B**
Average	31.00	4.64	1.50	8.00	0.50	1.70
Min	1.00	0.5	1.00	2.00	0.50	1.00
Medium	12.00	2	1.50	4.00	0.50	2.00
Max	100.00	20	2.0	18.00	0.50	2.00
Range	1.00–100.00	0.5–20.0	1.00–2.00	2.00–18.00	0.50	1.00–2.00
Number Of Samples	5	7	2	3	1	5
Chlorophyll *a* (mg/m^3)	**ML-2**	**LW-4**	**LW-1**	**LW-1B**	**LW-2**	**LW-2B**
Average	36.42	16.96	9.50	24.27	3.75	11.55
Min	13.00	6.90	8.10	2.50	3.75	1.45
Medium	43.60	13.30	9.50	24.70	3.75	12.80
Max	51.50	41.50	10.90	45.60	3.75	16.40
Range	13.00–51.50	6.90–41.50	8.10–10.90	2.50–45.60	3.375	1.45–16.40
Number Of Samples	5	7	2	3	1	5

Table B-6. Depth profiles of water quality data in Lake Walcott at LW-1.

DEPTH (m)	TEMPERATURE at LW-1 (ºC)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	17.59	21.57	23.63	22.74	20.90	11.12
2	16.43	19.22	22.28	21.52	20.11	11.10
4	15.75	18.68	21.52	21.34	19.79	11.10
6	15.48	18.55	21.11	21.19	19.72	11.05
8			21.05	20.93	19.67	11.05
10			20.93	20.62	19.60	11.03
12			20.88			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

DEPTH (m)	Conductivity at LW-1 (mS/cm)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	453.9	436.4	434.7	400.4	377.4	404.5
2	453.0	435.9	429.0	399.5	378.6	404.5
4	452.9	436.1	433.7	399.7	380.1	404.4
6	455.0	436.9	438.6	400.7	380.1	404.3
8			437.5	403.9	381.2	404.3
10			441.0	407.4	383.5	404.8
12			441.5			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

DEPTH (m)	Dissolved Oxygen at LW-1 (% Saturation)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	84.5	109.9	126.4	144.2	127.2	83.2
2	82.0	108.2	136.9	131.6	109.6	83.1
4	77.7	103.0	116.1	128.4	92.5	82.8
6	64.3	96.3	89.1	122.0	87.5	82.3
8			83.0	103.6	76.7	82.2
10			61.4	76.7	61.9	81.8
12			59.2			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

DEPTH (m)	Dissolved Oxygen at LW-1 (mg/l)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	7.16	8.52	9.38	10.89	9.98	8.14
2	7.06	8.76	10.46	10.10	8.65	8.13
4	6.77	8.39	8.99	9.98	7.36	8.10
6	5.56	7.89	7.00	9.51	7.01	8.07
8			6.47	8.00	6.21	8.07
10			4.82	6.03	5.03	8.04
12			4.59			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

DEPTH (m)	pH at LW-1 (pH)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	7.96	8.84	11.15	n/d	11.30	6.37
2	7.94	8.86	11.24	n/d	11.22	6.40
4	7.92	8.81	11.04	n/d	11.10	6.42
6	7.77	8.70	10.91	n/d	11.09	6.42
8			11.02	n/d	11.02	6.43
10			10.82	n/d	10.97	6.44
12			10.77			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

** Instrument indicating calibration error*

DEPTH (m)	Turbidity at LW-1 (NTU)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	0.3	0.0	0.0	0.0	0.0	0.0
2	0.6	0.0	0.0	0.0	0.2	0.0
4	1.3	0.0	0.9	0.0	0.5	0.1
6	3.2	0.0	0.0	7.1	0.4	0.3
8			0.0	0.5	1.6	0.5
10			0.0	2.0	2.6	0.9
12			0.0			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

** Instrument indicating calibration error*

DEPTH (m)	Salinity at LW-1 (ppt)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	0.23	0.22	0.22	0.20	0.19	0.20
2	0.23	0.22	0.21	0.20	0.19	0.20
4	0.23	0.22	0.22	0.20	0.19	0.20
6	0.23	0.22	0.22	0.20	0.19	0.20
8			0.22	0.20	0.19	0.20
10			0.22	0.20	0.19	0.20
12			0.22			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

DEPTH (m)	Total Dissolved Solids at LW-1 (ppm)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-1	LW-1	LW-1B	LW-1B	LW-1B	LW-1B
Surface	0.2902	0.2792	0.2788	0.2560	0.2414	0.2589
2	0.2899	0.2789	0.2745	0.2556	0.2422	0.2590
4	0.2897	0.2791	0.2777	0.2558	0.2433	0.2588
6	0.2912	0.2796	0.2805	0.2564	0.2435	0.2587
8			0.2803	0.2583	0.2445	0.2586
10			0.2824	0.2609	0.2446	0.2588
12			0.2825			
Bottom	(6.5 m)	(6.5 m)	(12.6 m)	(11.3 m)	(11.4 m)	(11.1 m)

Table B-7. Depth profiles of water quality data in Lake Walcott at LW-2.

DEPTH (m)	TEMPERATURE at LW-2 (ºC)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	17.77	22.10	24.20	22.73	20.81	10.84
2	16.47	20.28	21.78	21.56	19.95	10.73
4	15.52	19.13	21.51	21.11	19.86	10.71
6		19.01	21.42	20.86	19.77	10.70
8		18.95	21.24	20.65	19.26	10.68
10		18.91	20.89	20.48	19.15	10.68
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)

DEPTH (m)	Conductivity at LW-2 (mS/cm)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	452.5	434.1	433.6	395.6	368.8	407.7
2	451.5	433.1	429.3	394.4	372.1	407.6
4	449.0	433.1	432.5	398.6	372.0	407.8
6		434.5	432.9	401.7	374.0	408.1
8		434.6	433.7	403.1	381.5	408.1
10		435.1	436.3	403.2	382.4	408.2
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)

DEPTH (m)	Dissolved Oxygen at LW-2 (% Saturation)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	85.5	111.7	111.4	153.8	157.0	82.6
2	84.2	112.9	114.8	142.7	130.9	82.6
4	87.3	113.3	92.3	104.4	120.1	82.2
6		98.9	90.6	87.8	110.9	81.7
8		97.0	86.9	71.2	63.2	81.3
10		94.3	64.9	68.2	50.2	81.6
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)

DEPTH (m)	Dissolved Oxygen at LW-2 (mg/l)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	7.20	8.57	8.19	11.65	12.34	8.15
2	7.26	9.00	8.91	11.04	10.40	8.17
4	7.70	9.18	7.14	8.05	9.59	8.14
6		8.03	7.02	6.85	8.82	8.09
8		7.90	6.74	5.53	5.04	8.07
10		7.56	5.03	5.38	4.02	8.08
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)

DEPTH (m)	pH at LW-2 (pH)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	8.04	8.91	11.15	n/d	11.47	6.34
2	8.02	8.95	11.10	n/d	11.27	6.37
4	7.99	8.94	10.86	n/d	11.27	6.38
6		8.87	10.82	n/d	11.21	6.39
8		8.87	10.76	n/d	10.78	6.40
10		8.85	10.60	n/d	10.70	6.41
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)
** Instrument indicating calibration error*						

DEPTH (m)	Turbidity at LW-2 (NTU)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	0.0	0.0	0.0	1.3	4.7	0.0
2	0.1	0.0	0.0	2.0	6.1	0.0
4	0.7	0.0	0.0	2.0	5.8	0.0
6		0.0	0.0	2.0	5.6	0.5
8		0.0	0.0	3.6	5.7	1.2
10		0.0	1.7	4.5	6.9	2.2
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)
** Instrument indicating calibration error*						

DEPTH (m)	Salinity at LW-2 (ppt)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	0.23	0.22	0.22	0.20	0.18	0.20
2	0.23	0.22	0.22	0.20	0.18	0.20
4	0.23	0.22	0.22	0.20	0.18	0.20
6		0.22	0.22	0.20	0.18	0.20
8		0.22	0.22	0.20	0.19	0.20
10		0.22	0.22	0.20	0.19	0.20
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)

DEPTH (m)	Total Dissolved Solids at LW-2 (ppm)					
	6/1	6/22	7/27	8/15	8/31	10/19
	LW-2	LW-2B	LW-2B	LW-2B	LW-2B	LW-2B
Surface	0.2898	0.2778	0.2778	0.2532	0.2359	0.2613
2	0.2886	0.2773	0.2747	0.2525	0.2382	0.2610
4	0.2876	0.2773	0.2769	0.2548	0.2382	0.2609
6		0.2780	0.2769	0.2568	0.2390	0.2611
8		0.2781	0.2773	0.2578	0.2441	0.2615
10		0.2785	0.2795	0.2581	0.2448	0.2612
bottom	(5.5 m)	(11.5 m)	(11.4 m)	(11.3 m)	(11.5 m)	(11.3 m)

Table B-8. Depth profiles of water quality data in Snake River at LW-4.

DEPTH (m)	Temperature at LW-4 (ºC)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	17.39	19.03	21.43	21.23	20.00	14.67	10.19
2	15.24	18.89	21.26	20.31	19.47	14.70	10.19
4	15.10	18.90	21.26	20.14	19.43	14.71	10.19
6	15.12	18.90	21.21	20.12	19.43	14.71	10.19
8	15.06	18.91	21.13	20.11	19.44	14.72	10.18
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)

DEPTH (m)	Conductivity at LW-4 (uS/cm)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	449.3	432.5	421.8	397.3	380.9	407.9	421.6
2	447.4	433.9	421.5	396.5	381.2	408.5	421.5
4	449.5	435.9	421.9	396.6	381.7	408.2	421.3
6	451.2	434.3	423.7	396.4	382.1	408.2	421.7
8	450.0	434.2	428.7	397.6	383.1	408.4	421.4
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)

DEPTH (m)	Dissolved Oxygen at LW-4 (% Saturation)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	91.9	98.7	98.5	84.8	94.3	85.6	83.8
2	88.2	97.1	91.9	82.1	85.2	85.3	83.1
4	87.1	96.8	91.3	76.9	82.2	85.0	82.8
6	87.1	96.6	90.7	76.7	81.4	84.7	82.6
8	86.3	96.7	90.7	76.2	80.7	84.1	82.2
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)

DEPTH (m)	Dissolved Oxygen at LW-4 (mg/l)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	7.81	8.01	7.63	6.61	7.52	7.76	8.39
2	7.83	7.91	7.15	6.51	6.88	7.72	8.33
4	7.76	7.90	7.10	6.11	6.62	7.68	8.28
6	7.75	7.90	7.07	6.10	6.56	7.68	8.26
8	7.67	7.89	7.07	6.06	6.52	7.61	8.23
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)

DEPTH (m)	pH at LW-4 (pH)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	8.02	8.67	10.76	n/d	11.01	6.78	6.38
2	7.95	8.68	10.79	n/d	10.99	6.68	6.49
4	7.90	8.70	10.76	n/d	10.96	6.76	6.51
6	7.91	8.71	10.74	n/d	10.96	6.77	6.54
8	7.92	8.71	10.72	n/d	10.94	6.76	6.55
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)
** Instrument indicating calibration error*							

DEPTH (m)	Turbidity at LW-4 (NTU)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	3.5	0.0	3.7	9.7	8.1	22.8	6.3
2	4.2	0.6	7.7	11.1	92.3	23.7	7.0
4	4.6	1.6	10.9	12.2	19.9	23.7	7.0
6	5.0	2.5	13.9	13.2	22.0	24.3	7.3
8	5.3	3.5	27.1	14.6	20.2	26.7	8.0
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)
** Instrument indicating calibration error*							

DEPTH (m)	Salinity at LW-4 (ppt)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	0.23	0.22	0.21	0.20	0.19	0.20	0.21
2	0.22	0.22	0.21	0.20	0.19	0.20	0.22
4	0.23	0.22	0.21	0.20	0.19	0.20	0.21
6	0.23	0.22	0.21	0.20	0.19	0.20	0.21
8	0.23	0.22	0.21	0.20	0.19	0.20	0.21
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)

DEPTH (m)	Total Dissolved Solids at LW-4 (ppm)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	LW4	LW4	LW4	LW4	LW4	LW4	LW4
surface	0.2874	0.2767	0.2696	0.2544	0.2438	0.2610	0.2697
2	0.2864	0.2773	0.2698	0.2537	0.2438	0.2615	0.2697
4	0.2871	0.2780	0.2699	0.2539	0.2445	0.2613	0.2701
6	0.2882	0.2781	0.2719	0.2537	0.2448	0.2613	0.2700
8	0.2880	0.2779	0.2744	0.2556	0.2449	0.2612	0.2698
bottom	(8.5m)	(9.2m)	(8.3m)	(9.2m)	(9.0m)	(8.8m)	(9.6m)

Table B-9. Depth profiles of water quality data in Snake River at ML-2.

DEPTH (m)	TEMPERATURE at ML-2 (ºC)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		20.01	23.40	21.57	21.70		10.87
2	16.91	19.97	23.32	22.16	21.19	15.54	10.79
4	16.80	19.91	23.20	22.06	21.13	15.54	10.67
6	16.79	19.91	23.11	22.06	21.12		10.42
8	16.79	19.91	23.06	21.94	21.11		10.41
10	16.79	19.93	23.01	21.93	21.09		10.41
12	16.80	19.92	23.03	21.93	21.07		
14	16.79	19.92	22.98	21.91	21.07		
16			22.96				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

DEPTH (m)	Conductivity at ML-2 (mS/cm)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		443.5	439.9	415.1	382.9		425.3
2	457.9	443.5	439.4	409.6	383.8	399.5	425.3
4	458.0	443.2	439.9	409.6	383.8		425.6
6	457.1	443.4	439.8	409.7	384.0		426.4
8	457.8	443.9	440.2	410.3	384.4		426.4
10	457.8	443.4	440.1	410.1	384.0		426.4
12	458.1	443.8	440.1	410.0	384.0		
14	457.7	443.7	440.3	409.9	384.1		
16			440.3				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

DEPTH (m)	Dissolved Oxygen at ML-2 (% Saturation)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		111.5	1406.0	152.5	149.2		113.4
2	87.1	112.2	139.6	146.7	146.4	112.9	112.1
4	87.1	111.3	136.9	144.3	143.7		111.2
6	86.8	111.9	135.5	143.8	142.9		104.1
8	86.6	111.4	134.1	141.9	142.1		103.7
10	86.6	111.8	133.7	141.8	141.7		103.5
12	86.7	111.5	133.8	142.0	140.7		
14	86.4	111.8	133.8	141.7	141.9		
16			133.4				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

DEPTH (m)	Dissolved Oxygen at ML-2 (mg/l)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		8.90	10.50	11.78	11.56		11.13
2	7.47	8.90	10.43	11.23	11.35	10.01	11.08
4	7.48	8.89	10.25	11.08	11.22	10.01	11.01
6	7.49	8.93	10.26	11.02	11.15		10.34
8	7.44	8.90	10.07	10.93	11.10		10.33
10	7.43	8.93	10.06	10.90	11.04		10.31
12	7.45	8.90	10.07	10.92	11.00		
14	7.42	8.93	10.06	10.88	11.07		
16			10.04				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

DEPTH (m)	pH at ML-2 (pH)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		8.91	11.10	n/d	11.38		6.62
2	7.91	8.90	11.08	n/d	11.30	6.80	6.79
4	7.94	8.87	11.01	n/d	11.39		6.84
6	7.95	8.87	10.96	n/d	11.39		6.81
8	7.95	8.89	11.07	n/d	11.39		6.83
10	7.97	8.96	11.04	n/d	11.38		6.85
12	7.97	8.97	11.03	n/d	11.38		
14	7.97	8.97	11.02	n/d	11.38		
16			11.01				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

** Instrument indicating calibration error*

DEPTH (m)	Turbidity at ML-2 (NTU)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		0.0	5.1	4.4	3.2		0.0
2	5.9	0.0	9.1	7.1	4.5	0.4	0.0
4	5.6	0.0	13.5	8.8	5.4		0.0
6	6.3	0.0	11.1	9.1	6.3		0.0
8	6.6	0.0	16.3	10.6	6.7		0.0
10	6.9	0.0	12.9	10.9	7.4		0.0
12	6.9	0.0	10.8	11.9	7.9		
14	7.3	0.0	10.7	12.0	8.1		
16			8.9				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)
** Instrument indicating calibration error*							

DEPTH (m)	Salinity at ML-2 (ppt)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		0.22	0.22	0.21	0.19		0.21
2	0.23	0.22	0.22	0.20	0.19	0.20	0.21
4	0.23	0.22	0.22	0.20	0.19		0.21
6	0.23	0.22	0.22	0.20	0.19		0.21
8	0.23	0.22	0.22	0.20	0.19		0.21
10	0.23	0.22	0.22	0.20	0.19		0.21
12	0.23	0.22	0.22	0.20	0.19		
14	0.23	0.22	0.22	0.20	0.19		
16			0.22				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

DEPTH (m)	Total Dissolved Solids at ML-2 (ppm)						
	6/1	6/22	7/27	8/15	8/31	10/03	10/19
	ML-2	ML-2	ML-2	ML-2	ML-2	ML-2S	ML-2
Surface		0.2840	0.2184	0.2645	0.2455		0.2724
2	0.2930	0.2838	0.2813	0.2623	0.2457	0.2556	0.2720
4	0.2929	0.2837	0.2816	0.2625	0.2457		0.2722
6	0.2932	0.2839	0.2817	0.2623	0.2457		0.2728
8	0.2932	0.2841	0.2816	0.2625	0.2458		0.2731
10	0.2930	0.2839	0.2818	0.2622	0.2458		0.2728
12	0.2928	0.2841	0.2818	0.2625	0.2458		
14	0.2930	0.2837	0.2817	0.2622	0.2460		
16			0.2818				
Bottom		(14.5 m)	(16.5 m)	(14.9 m)	(14.8 m)		(11.8 m)

Appendix C. Historical Water Quality Data in the Lake Walcott Subbasin

Table C-1. Description of sampling locations.

LOCATION	Site Code	Latitude	Longitude
Raft River @ Hwy Bridge (Interstate 86)	RR1	42.59736	-113.2383
Lane's Gulch @ Osbourn Loop Sign	LG1	42.62222	-113.1175
Fall Creek under Interstate bridge	FC1	42.62656	-113.0856
Rock Creek @ Register Rock	RC1	42.65297	-113.0176
Little Creek @ Eagle Creek Rd	LC1	42.71161	-112.9334
Warm Creek @ Neely	WC1	42.73203	-112.9059
Rueger Springs @ Fish Hatchery	RS1	42.76731	-112.8942
Ferry Hollow @ Ferry Hollow Rd	FH1	42.75386	-112.8729
Marsh Creek @ 750 W Road	MC1	42.52500	-113.6469
Marsh Creek @ 6S Ranch - Upper Creek		42.45331	-113.5222
Marsh Creek @ 6S Ranch - Mid Creek		42.46703	-113.5159
Marsh Creek @ 6S Ranch Lower Creek	MC2	42.52897	-113.5342

Table C-2. Lake Walcott tributary data 2009–2015.

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
RR1	6/3/2009	10:05 AM	9.56	15.84	0.12	1.1	5900		1386	1102	
RR1	3/2/2010	9:50 AM			0.5	11	400		9858		
RR1	4/18/2011	9:55 AM		15.86	0.005	0.135	480		92		
RR1	5/18/2011	10:00 AM		10.61	0.26	1	1200		656	465	
RR1	6/15/2011	10:00 AM		17.73	0.26	0.54	140		563	356.8	
RR1	7/19/2011	10:00 AM		19.11	0.05	0.19	40	2.42	93	111.8	
RR1	1/25/2012	9:50 AM		0.07	0.41	0.68	280		246	412	
LG1	3/2/2010	10:15 AM		2.03	0.24	1.1	1040		988		
FC1	6/3/2009	11:40 AM	20.82	17.57	0.15	0.021	26	0.39	10		69.1
FC1	8/3/2009	10:00 AM	13.83	15.91	0.13	0.025	80	0.53	0.5		1.3
FC1	10/5/2009	10:30 AM	10.04	13.29	0.31	0.053	28	2.7	11		
FC1	11/30/2009	10:25 AM	23.03	11.32	0.37	0.046	16	0	11	2	
FC1	12/28/2009	10:35 AM	23.84	9.69	0.35	0.072	30	0.5	50		
FC1	1/25/2010	11:00 AM	26.72	12.58	0.36	0.04	160	0.51	16		
FC1	3/2/2010	10:30 AM	24.6	12.63	0.37	0.096	20		42		
FC1	3/22/2010	10:20 AM	34.02	13.17	0.2	0.01	24		6	1	
FC1	4/19/2010	11:00 AM	22.63	14.66	0.17	0.02	20		3	0.5	1.1
FC1	5/12/2010	10:00 AM	16.34	14.16	0.24	0.015	60	0.47	6	2	4.2
FC1	6/29/2010	10:15 AM	14.67	17.78	0.22	0.017	46	0.41	2	0.5	1.9
FC1	7/19/2010	10:15 AM	14.79	19.72	0.19	0.081	28	0.47	60	7	0.4
FC1	8/24/2010	10:30 AM	19.89	18.34	0.21	0.005	32	0.44	4	1	1.9
FC1	9/20/2010	10:20 AM	18.4	16.51	0.26	0.024	88	0.42	5	1	2
FC1	10/25/2010	10:05 AM	22.72	11.09	0.36	0.027	88		3	1	
FC1	11/15/2010	10:20 AM	21.78	13.06	0.37	0.041	60	0.39	5	2	2.2
FC1	12/7/2010	10:20 AM	29.6	12.4	0.36	0.058			18	5	7.4
FC1	1/18/2011	10:15 AM	27.11	14.22	0.35	0.046	30	0.52	22	8	19.1
FC1	2/22/2011	10:15 AM	28.91	12.02	0.3	0.043	60		17	4	
FC1	3/30/2011	10:25 AM		16.03	0.22	0.015	36		6	2	
FC1	3/30/2011	10:30 AM			0.21	0.017	38		6	2	

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
FC1	4/18/2011	10:25 AM		13.9	0.18	0.005	28		3	1	
FC1	5/18/2011	10:25 AM	23.45	14.15	0.24	0.01	140	0.32	4	0.5	0
FC1	6/15/2011	10:30 AM	21.77	15.93	0.16	0.013	160		4	1	0.3
FC1	7/19/2011	10:30 AM	10.79	16.97	0.2	0.015	100	0.23	0.5	0.5	0
FC1	8/22/2011	10:20 AM		15.77	0.21	0.013	48		1	0.5	0
FC1	9/12/2011	10:25 AM	17.3	15.34	0.25	0.016	120		4	1	0
FC1	10/18/2011	10:15 AM	15.5	12.7	0.29	0.017	72		5	1	0
FC1	11/30/2011	10:40 AM	24.8	12.5	0.36	0.046	20		17	3	
FC1	12/12/2011	1:30 PM	30.5	12.52	0.36	0.098	34		62	16	23.7
FC1	1/25/2012	10:20 AM	30.6	13.26	0.33	0.07	20		36	6	19.7
FC1	1/25/2012	10:30 AM			0.33	0.067	20		37	6	
FC1	2/21/2012	10:50 AM	0.28	12.61							14.7
FC1	3/27/2012	1:10 PM	30.4	16.03	0.18	0.019	10		14	2	3.7
FC1	4/23/2012	10:20 AM		15.42	0.18	0.021	34		8	2	2.1
FC1	4/23/2012	10:25 AM	22.3		0.18	0.02	34		10	2	
FC1	5/23/2012	9:55 AM	11.1	13.59	0.22	0.013	60		4	1	
FC1	5/23/2012				0.005	0.005	1		0.5	0.5	
FC1	6/20/2012	10:15 AM	12.1	14.19	0.18	0.005	132		3	0.5	0
FC1	7/23/2012	9:35 AM			0.24	0.019	100		9	2	
FC1	7/23/2012	9:40 AM		16.05	0.21	0.019	100		9	2	6.4
FC1	8/21/2012	11:15 AM	15.4	16.35	0.15	0.036	52		4	0.5	0.6
FC1	9/26/2012	11:05 AM	14.1	15.15	0.24	0.035	20		2	0.5	0.2
FC1	10/29/2012	11:35 AM	21.2	14.36	0.34	0.024	1		5	1	1.4
FC1	11/14/2012	10:35 AM	22.8	13.28	0.35	0.024	22		7	2	0.8
FC1	11/14/2012	10:40 AM			0.35	0.026	21		6	2	
FC1	12/17/2012	10:20 AM		11.88		0.038			20		5
FC1	1/29/2013	10:30 AM	23.7	11.83	0.34	0.041	62		32	7	10.9
FC1	1/29/2013	10:35 AM			0.33	0.04	100		27	7	
FC1	2/26/2013	10:30 AM	22.3	11.64	0.27	0.024	4		17	4	5.9
FC1	3/26/2013	11:45 AM	25.4	13.21	0.17	0.012	32		4	0.5	0
FC1	3/26/2013	11:50 AM			0.18	0.016	9		4	1	
FC1	4/22/2013	11:05 AM	21.2	11.85	0.2	0.01	1		4	0.5	0

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
FC1	6/24/2013	11:30 AM		16.78	0.15	0.005	10		2	0.5	0
FC1	6/24/2013	11:35 AM	15.9		0.15	0.005	20		2	0.5	
FC1	7/29/2013	12:10 PM	12.8	17.55	0.14	0.018	6		3	0.5	0
FC1	8/20/2013	11:00 AM	13.67	16.59	0.15	0.005	60		4	0.5	0
FC1	9/30/2013	11:20 AM		15.61							6.9
FC1	10/28/2013	11:05 AM		13.44							23.91
FC1	11/25/2013	11:00 AM			0.37	0.046	28		22	_7_	
FC1	12/16/2013	10:40 AM	24.22	10.83	0.37	0.117			84	30	48.6
FC1	12/16/2013	10:45 AM			0.37	0.131			90	30	
FC1	1/28/2014	10:30 AM	25.57	10.84	0.34	0.181			47	155	73
FC1	1/28/2014	10:35 AM									
FC1	2/26/2014	10:55 AM	24.89	12.71	0.25	0.021	20		13	4	4.1
FC1	3/24/2014	11:25 AM	26.63	13.68	0.19	0.099	60		5	1	0.2
FC1	4/28/2014	11:00 AM	23.55	13.28	0.24	0.016	_5_		13	2	0.3
FC1	4/28/2014	11:05 AM			0.23	0.017	20		12	2	
FC1	6/16/2014	11:15 AM	14.1	15.82	0.19	0.005	36		3	0.5	0
FC1	7/21/2014	11:10 AM	13.23	17.37	0.15	0.005	40		4	0.5	0
FC1	7/21/2014	12:05 PM									
FC1	8/18/2014	11:30 AM	18.06	16.15	0.19	0.011	100		4	_0.5_	0
FC1	9/22/2014	11:15 AM	17.8	16.43	0.25	0.01	60		1	_0.5_	0.8
FC1	10/20/2014	11:40 AM	20	14.38	0.27	0.02	8		14	1	0.8
FC1	11/24/2014	11:20 AM	23.1	11.99	0.37	0.079	120		46	13	25.3
FC1	12/8/2014	10:40 AM	26.94	12.57	0.35	0.079	80		55	11	22.5
FC1	1/12/2015	11:05 AM	26.64	13.08	0.36	0.032	20		39	7	14.5
FC1	1/12/2015	11:10 AM			0.37	0.036	40		42	8	
FC1	7/13/2015	11:05 AM		17.3	0.15	0.016	140		9	2	6.4
FC1	8/18/2015	11:28 AM	14.88	16							3.9
FC1	9/14/2015	11:21 AM	17.49	16.3							5
RC1	6/3/2009	12:30		14.78	0.95	0.16	9000	0.81	16410		3000
RC1	6/3/2009	12:30			0.89		29000		16320		
RC1	8/3/2009	10:40	5.18	16.76	0.71	0.52	180	2.05	4		9.1
RC1	10/5/2009	11:00		7.16	0.93	0.43	900	0	122		172.3

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
RC1	11/30/2009	10:50	16.23	2.78	0.69	0.27	20	2.96	208	75	
RC1	12/28/2009	11:40	28.38	0.23	0.72		1	4.9	86		
RC1	1/25/2010	11:20	31.39	3.45	0.64	0.25	18	2.37	166		
RC1	3/2/2010	11:20	37.26	6.05	0.53	0.28	4		1048		
RC1	3/22/2010	11:10	28.15	6.97	0.49	0.27	2		243	77	
RC1	4/19/2010	11:25	20.03	11.81	0.32	0.32	36		144	42	80.9
RC1	5/12/2010	10:35	24.5	8.71	0.2	0.42	40		16	8	17.8
RC1	5/12/2010	10:40			0.22		20		15	8	
RC1	6/29/2010	10:40		19.98	0.38	0.47	390	4.05	3	2	3.8
RC1	8/24/2010	11:05	2.65	17.75	0.28	0.45	140	2.04	8	3	6
RC1	9/20/2010	10:50	3.1	16	0.78	0.45	2	0	7	3	4
RC1	10/25/2010	10:40	24.73	6.92	1.42		900		225	102	
RC1	11/15/2010	11:00		6.8	0.79	0.37	50		154	66	117.8
RC1	12/7/2010	10:55		4.55	0.65	0.35			197	70	124
RC1	1/18/2011	10:50		9.24	0.69	0.2	5	7.2	2059	2850	3000
RC1	1/18/2011	10:55			0.68		5		1877	2870	
RC1	2/22/2011	10:50		2.99	0.6	0.34	1		189	86	
RC1	3/30/2011	10:50		12.67	0.67	0.32	20		326	91	
RC1	4/18/2011	10:45		12.4	0.56	0.33	38		308	92	
RC1	5/18/2011	11:00	26.43	9.32	0.66		24	1.59	132	50	71.6
RC1	6/15/2011	11:00	7.79	16.01	0.4	0.38	44		76	18	12.8
RC1	7/19/2011	10:55	5.65	19.09	1.12	0.39	180	0.39	44	30	50.2
RC1	8/22/2011	10:40		16.1	0.94	0.4	80		8	5	10.7
RC1	9/12/2011	10:55		14.26	1.24	0.4	52		36	17	22.9
RC1	10/18/2011	10:50		8.85	0.89	0.35	1000		995	157	121.7
RC1	11/30/2011	11:00		5.71	0.75	0.31	240		252	70	
RC1	12/12/2011	13:05		2.22	0.21	0.3	10		184	43	88.9
RC1	1/25/2012	11:05		4.41	0.8	0.32	60		196	80	134.1
RC1	2/21/2012	11:30		4.45		0.31					133.7
RC1	3/27/2012	13:55		8.14	0.71	0.33	20		179	60	107.8
RC1	4/23/2012	11:05	21.8	13.38	0.33	0.36	60		21	11	20.5
RC1	5/23/2012	10:45	2.7	13.14	0.3	0.48	8		8	2	

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
RC1	6/20/2012	10:45	2.4	14.47	0.63	0.45	104		15	2	1.5
RC1	7/23/2012	10:05		20.89	0.44	0.48	100		27	14	14.6
RC1	8/21/2012	11:45	0.2	18.34		0.47	60				14.7
RC1	9/26/2012	11:50	4.5	13.03	0.77	0.45	420		28	11	11.6
RC1	9/26/2012	11:55			0.76		480		25	10	
RC1	10/29/2012	12:20	15.4	9.13	0.92	0.43	60		24	12	18.1
RC1	11/14/2012	11:00	31.5	5.74	0.66	0.36	8		48	24	40
RC1	12/17/2012	10:40		4.14		0.34			160		52.7
RC1	1/29/2013	10:55		2.7	0.69	0.34	12		49	22	39
RC1	2/26/2013	11:00		1.31	0.57	0.33	1		23	11	22
RC1	3/26/2013	12:17		6.26	0.5	0.35	40		66	25	45.3
RC1	4/22/2013	12:00		7.62	0.58	0.36	20		30	13	28.7
RC1	6/24/2013	12:03	0	20.06	0.02	0.46	3040		3	2	4.4
RC1	8/20/2013	11:30	1.099	19.75	0.005	0.45	50		9	7	7.1
RC1	9/30/2013	11:55	4.73	11.99		0.48					23.6
RC1	10/28/2013	11:20	9.369	8.47		0.44					20.4
RC1	11/25/2013	11:20			0.68		60		98	65	
RC1	12/16/2013	11:20		1.89	0.73	0.33			236	159	262
RC1	1/28/2014	10:54	27.66	1.32	0.64	0.33			67	110	119.4
RC1	2/26/2014	11:25	37.78	5.26	0.59	0.35	70		172	86	143
RC1	3/24/2014	12:00	30.94	6.28	0.27	0.34	2		27	14	23.8
RC1	4/28/2014	11:20	14.48	6.91	0.35	0.45	1		14	8	12.4
RC1	6/16/2014	11:55	0.098	15.65	0.01	0.43	600		6	2	30.6
RC1	8/18/2014	11:45	8.563	17.53	1.12	0.44	200		248	217	369.7
RC1	9/22/2014	11:40	3.678	15.52	0.58	0.48	60		5	3	4.2
RC1	10/20/2014	12:05	11.69	9.76	0.85	0.44	240		61	44	71.2
RC1	11/24/2014	11:45	34.2	3.18	0.71	0.38	100		239	108	177.3
RC1	12/8/2014	11:00	34	6.42	0.63	0.36	40		174	81	140.8
RC1	1/12/2015	11:30	34	4.84	0.71	0.36	20		205	85	156.7
RC1	2/23/2015	11:20	34	0.87		0.34					109.9
RC1	3/23/2015	11:05	24.41	8.19		0.34					74
RC1	4/21/2015	11:30	9.443	11.15		0.4					13.5

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
RC1	5/18/2015	11:30	9.239	12.15		0.45					21.3
RC1	6/17/2015	12:10	3.454	19.76		0.44					0.5
RC1	7/13/2015	11:20		20.73	0.005	0.47	200		6	3	1.5
LC1	6/3/2009	1:25 PM	2.1	16.84	1.73	0.2	360	2.06	184		184.4
LC1	8/3/2009	11:30 AM	3.89	17.9	0.005	0.2	2800	2.69	17		23
LC1	10/5/2009	11:30 AM	1.4	5.94	0.25	0.064	600	0	34		48.1
LC1	11/30/2009	11:25 AM	1.18	1.06	0.39	0.031	60	1.19	11	4	
LC1	1/25/2010	11:55 AM	1.14	1.95	0.39	0.047	14	0.48	16		
LC1	3/2/2010	12:00 PM	1.28	3.55	0.44	0.25	1		124		
LC1	3/22/2010	11:25 AM	1.14	5.89	0.31	0.079	2		81	38	
LC1	4/19/2010	12:10 PM		13.27	0.28	0.092	52		27	13	40.2
LC1	5/12/2010	11:10 AM	1	8.06	0.14	0.046	20		16	9	18
LC1	6/29/2010	11:05 AM		20.92	0.12	0.059	1680	5.19	24	5	5.8
LC1	7/19/2010	11:25 AM	2.68	19.15	0.05	0.196	0.5	3.79	64	20	38.1
LC1	8/24/2010	11:35 AM	3.63	19.44	0.06	0.62	500	6.25	274	84	139.5
LC1	9/20/2010	11:15 AM	1.82	15.05	0.18	0.076	100	0	29	13	23.4
LC1	10/25/2010	11:25 AM	0.19	5.17	0.19	0.181	4000		50	29	
LC1	11/15/2010	11:15 AM	1.01	6.18	0.3	0.042	50	1.34	14	8	12.6
LC1	1/18/2011	11:15 AM	1.37	7.38	0.42	0.25	6	1.62	173	117	232.5
LC1	2/22/2011	11:10 AM	1.32	1.03	0.4	0.12	1		72	46	
LC1	3/30/2011	12:00 PM		9.54	0.36	0.106	1		39	30	
LC1	4/18/2011	11:00 AM		11.12	0.16	0.054	2		31	22	
LC1	5/18/2011	11:35 AM	0.67	11.22	0.56	0.053	36	1.25	23	14	21
LC1	6/15/2011	12:00 PM		18.59	0.005	0.069	172		43	28	35
LC1	8/22/2011	11:00 AM		18.76	0.09	0.28	84		174	62	118.8
LC1	9/12/2011	11:20 AM		17.15	0.14	0.17	40		60	30	42.4
LC1	10/18/2011	11:00 AM		6.99	0.28	0.179	1024		77	66	108
LC1	1/25/2012	11:55 AM	1.2	2.22	0.43	0.3	80		72	55	115.1
LC1	3/27/2012	12:37 PM	1	6.81	0.28	0.066	2		27	22	37.5
LC1	4/23/2012	11:50 AM	0.6	13.42	0.14	0.087	2		23	18	27.7
LC1	5/23/2012	11:15 AM	0.6	11.24	0.18	0.179	440		55	51	
LC1	6/20/2012	11:20 AM	1.1	13.62	0.1	0.075	240		21	16	25.4

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
LC1	7/23/2012	10:20 AM		19.88	0.12	0.152	500		57	29	46.7
LC1	8/21/2012	12:20 PM	1.1	18.3	0.13	0.169	900		48	38	67.3
LC1	9/26/2012	12:20 PM	3	14.4	0.18	0.146	700		35	23	56.8
LC1	10/29/2012	1:00 PM	0.9	8.9	0.21	0.089	240		33	30	58.2
LC1	11/14/2012	11:40 AM	1.1	3.29	0.33	0.066	800		19	18	31.7
LC1	12/17/2012	11:00 AM		3.63		0.064			38		22.3
LC1	1/29/2013	11:40 AM		1.64	0.39	0.102	40		41	30	52.4
LC1	2/26/2013	11:20 AM		0.49	0.38	0.08	1		39	30	52.5
LC1	3/26/2013	12:40 PM		4.48	0.35	0.107	680		44	33	61.7
LC1	4/22/2013	12:20 PM		5.96	0.18	0.128	10		41	45	81.3
LC1	6/24/2013	12:36 PM	1.6	18.63	0.09	0.046	240		9	5	6.3
LC1	7/29/2013	1:00 PM	2.2	21.35	0.08	0.217	100		143	25	16.4
LC1	8/20/2013	12:00 PM	0.707	20.02	0.65	0.17	120		43	29	47.4
LC1	9/30/2013	12:20 PM	1.727	12.09							111.2
LC1	11/25/2013	11:45 AM			0.48	0.032	8		5	6	
LC1	2/26/2014	11:55 AM	0.85	3.42	0.39	0.058	1		14	12	27.5
LC1	3/24/2014	12:21 PM	0.463	4.28	0.16	0.012	20		3	4	5.3
LC1	4/28/2014	11:50 AM	0.029	7.21	0.47	0.075	2		43	17	36.5
LC1	6/16/2014	12:20 PM	1.3	17.13	0.06	0.003	620		8	5	6.3
LC1	7/21/2014	11:45 AM	1.111	21.04	0.22	0.131	200		16	8	13.9
LC1	8/18/2014	12:20 PM	6.404	18.73	0.24	0.31	500		200	65	105
LC1	9/22/2014	12:05 PM	2.39	15.92	0.13	0.062	300		20	13	27.5
LC1	10/20/2014	12:30 PM	0.9	9.67	0.24	0.05	1800		15	16	26.8
LC1	11/24/2014	12:15 PM	0.761	2.17	0.3	0.021	50		6	4	5.4
LC1	11/24/2014	12:20 PM			0.3	0.018	50		4	4	
LC1	12/8/2014	11:30 AM	0.585	4.12	0.38	0.016	24		6	5	9
LC1	7/13/2015	12:00 PM		18.69	0.16	0.43	2400		26	11	17.8
LC1	7/13/2015	12:05 PM			0.21	0.43	2100		28	12	
WC1	8/3/2009	12:10 PM	1.54	18.47	0.51	0.086	460	0.78	38		34.2
WC1	10/5/2009	11:45 AM		9.99	0.52	0.112	600	0	37		89
WC1	11/30/2009	11:50 AM		8.65	0.49	0.096	60	3.65	52	19	
WC1	12/28/2009	12:15 PM		5.42	0.48	0.31	180	3.2	264		

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
WC1	1/25/2010	12:20 PM		9.89	0.49	0.144	20	1.16	191		
WC1	1/25/2010	12:20 PM	5.51		0.48	0.213	120		145		
WC1	3/2/2010	12:20 PM	4.67	11.32	0.42	0.26	40		226		
WC1	3/22/2010	11:55 AM	3.01	12.27	0.41	0.06	120		77	22	
WC1	4/19/2010	12:25 PM	3.8	16.52	0.39	0.197	360		110	34	73.6
WC1	5/12/2010	11:30 AM	5.77	12.93	0.41	0.193	420		86	36	86.5
WC1	6/29/2010	11:25 AM	1.66	18.57	0.44	0.107	910	1.18	50	16	22.3
WC1	7/19/2010	11:50 AM	1.72	19.06	0.45	0.065	200	0.91	50	10	8.5
WC1	8/24/2010	12:00 PM		19.25	0.46	0.041	400	0.54	24	5	8
WC1	9/20/2010	11:35 AM	1.63	15.11	0.48	0.058	580	1.13	11	8	19.1
WC1	10/25/2010	11:15 AM		7.69	0.38	0.046	580		11	9	
WC1	11/15/2010	11:40 AM	5.08	12.11	0.47	0.078	600	0.85	31	17	27.6
WC1	12/7/2010	12:05 PM	5.04	10.91	0.48	0.165			91	47	82
WC1	1/18/2011	11:30 AM	5.04	8.5	0.51	0.19	200	2.83	176	80	244.9
WC1	2/22/2011	11:30 AM	5.19	9.06	0.47	0.14	2		189	43	
WC1	3/30/2011	11:50 AM		10.28	0.43	0.1.1	200		82	20	
WC1	4/18/2011	11:10 AM		11.71	0.38	0.114	220		83	25	
WC1	5/18/2011	11:50 AM	4.31	16.86	0.35	0.187	620	2.87	156	44	237.3
WC1	6/15/2011	12:15 PM	1.59	17.94	0.34	0.032	100		35	9	14.6
WC1	7/19/2011	11:45 AM	1.02		0.45	0.041	820		11	6	
WC1	7/19/2011	11:50 AM			0.44	0.041	600		10	6	
WC1	8/22/2011	11:15 AM		16.35	0.52	0.026	800		6	4	8.1
WC1	9/12/2011	11:30 AM	1.5	15.75	0.38	0.079	1060		13	10	8.1
WC1	10/18/2011	11:25 AM	1.9		0.5	0.041	200		15	11	
WC1	11/30/2011	12:05 PM	3.2	8.46	0.55	0.47	2		340	167	
WC1	12/12/2011	12:15 PM	5	7.2	0.53	0.7	1000		592	189	388.7
WC1	1/25/2012	11:30 AM	6	8.28	0.49	0.61	10		305	89	155.3
WC1	3/27/2012	11:45 AM	5.4	12.89	0.41	0.21	20		210	44	79.9
WC1	4/23/2012	12:10 PM	4.3	18.3	0.38	0.29	300		316	32	101.5
WC1	5/23/2012	11:30 AM	1.9	13.59	0.42	0.12	1200		50	23	
WC1	6/20/2012	11:40 AM	1.6	13.17	0.5	0.036	380		10	7	14.4
WC1	7/23/2012	10:35 AM		16.3	0.6	0.193	2100		126	47	34.5

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
WC1	8/21/2012	12:35 PM	2.3	16.84	0.4	0.087	2200		18	19	38.1
WC1	9/26/2012	12:50 PM	1.2	15.6	0.44	0.058	1100		11	11	20.2
WC1	10/29/2012	1:25 PM	2.7	13.47	0.48	0.152	100		105	50	84.1
WC1	11/14/2012	12:05 PM	3	9.79	0.53	0.302	520		340	75	137
WC1	12/17/2012	11:10 AM		8.07		0.299			270		137.6
WC1	1/29/2013	11:55 AM	5.1	9.3	0.47	0.386	220		393	91	152.4
WC1	2/26/2013	11:35 AM	5.5	8.89	0.43	0.092	300		68	26	48.1
WC1	3/26/2013	1:10 PM	5.6	11.98	0.4	0.159	40		156	45	84.5
WC1	4/22/2013	12:30 PM	5.3	11.6	0.42	0.33	200		346	29	96.8
WC1	6/24/2013	1:00 PM	1.2	16.96	0.52	0.051	740		28	11	16
WC1	7/29/2013	1:30 PM	1.3	19.31	0.41	0.035	10		14	6	6.3
WC1	8/20/2013	12:15 PM	1.81	18.48	0.4	0.032	440		11	6	9.1
WC1	11/25/2013	12:00 PM			0.51	0.28	1200		215	67	
WC1	12/16/2013	11:50 AM	4.358	4.7	0.54	0.75			275	880	454
WC1	1/28/2014	11:35 AM	4.211	4.96	0.53	0.22			38	206	86.3
WC1	2/26/2014	12:20 PM	5.24	9.36	0.47	0.065	20		42	13	24.1
WC1	3/24/2014	12:40 PM	4.839	12.35	0.34	0.076	20		61	14	23.5
WC1	3/24/2014	12:45 PM			0.34	0.085	14		69	14	
WC1	4/28/2014	12:15 PM	5.443	12.94	0.39	0.104	10		100	19	34.2
WC1	6/16/2014	1:10 PM	1.56	14.5	0.45	0.054	540		25	11	19
WC1	7/21/2014	12:00 PM	1.069	18.1	0.45	0.025	900		22	7	4.7
WC1	7/21/2014	12:05 PM			0.46	0.022	1800		7	4	
WC1	8/18/2014	12:40 PM	1.484	14.91	0.55	0.06	1000		23	13	94.1
WC1	9/22/2014	12:30 PM	1.909	16.18	0.44	0.051	700		18	4	22.5
WC1	10/20/2014	12:45 PM	1.417	10.21	0.47	0.037	560		11	9	15.3
WC1	11/24/2014	12:35 PM	4.591	8.31	0.47	0.25	600		201	39	88.9
WC1	12/8/2014	11:40 AM	4.759	9.78	0.49	0.2	100		166	34	71.5
WC1	1/12/2015	11:56 AM	5.626	11.27	0.49	0.22	300		236	43	91.8
WC1	7/13/2015	12:15 PM		17.05	0.53	0.054	700		16	6	6.1
RS1	6/3/2009	2:15 PM		14.89	1.88	0.035	2	108.6	2		0.3
RS1	8/3/2009	1:00 PM		16.17	1.72	0.059	16	0.46	3		0
RS1	10/5/2009	12:15 PM		12.97	1.64	0.1	16	0	0.5		16

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
RS1	11/30/2009	12:30 PM		12.63	1.65	0.014	1	0.38	0.5	0.5	
RS1	12/28/2009	12:30 PM		11.62	1.64	0.041	1	0	1		
RS1	1/25/2010	1:10 PM		12.58	1.69	0.059	1	0.28	4		
RS1	3/2/2010	12:55 PM		13.6	1.62	0.043	1		0.5		
RS1	3/22/2010	12:25 PM		13.12	1.66	0.031	20		2	0.5	
RS1	4/19/2010	1:00 PM		15.23	1.58	0.046	20		4	0.5	17.5
RS1	6/29/2010	11:55 AM		19.24	1.54	0.033	8	0.81	3	0.5	0
RS1	7/19/2010	12:30 PM		22.83	1.46	0.034	1	0.54	4	0.5	0
RS1	8/24/2010	12:30 PM		19.14	1.47	0.044	1	0.63	0.5	0.5	0
RS1	9/20/2010	12:05 PM		15.5	1.45	0.044	4	1.62	1	0.5	0
RS1	10/25/2010	11:55 AM		11.68	1.47	0.039	60		0.5	0.5	
RS1	10/25/2010	11:58 AM			1.46	0.041	4		0.5	0.5	
RS1	11/15/2010	12:05 PM		13.22	1.43	0.062	2	0.31	2	0.5	1.25
RS1	12/7/2010	11:30 AM		12.58	1.45	0.067			3	1	0
RS1	2/22/2011	12:00 PM		12.11	1.49	0.048	2		1	1	
RS1	3/30/2011	11:20 AM		11.27	1.53	0.048	2		1	1	
RS1	4/18/2011	11:30 AM		12.09	1.52	0.034	1		2	0.5	
RS1	5/18/2011	12:25 PM		14.21	1.45	0.028	2	0.43	2	0.5	0
RS1	6/15/2011	12:50 PM		16.3	1.45	0.032	8		1	0.5	0
RS1	7/19/2011	12:20 PM			1.44	0.032	8		0.5	0.5	
RS1	8/22/2011	11:50 AM		15.4	1.44	0.033	2		3	0.5	0.6
RS1	9/12/2011	12:05 PM		15.25	1.44	0.013	60		1	0.5	0
RS1	9/12/2011	12:10 PM			1.4	0.013	100		2	0.5	
RS1	10/18/2011	12:00 PM			1.41	0.03	8		4	0.5	
RS1	10/18/2011	12:05 PM			1.42	0.03	0.5		4	0.5	
RS1	11/30/2011	11:45 AM		11.99	1.42	0.064	160		0.5	0.5	
RS1	12/12/2011	11:45 AM		12	1.43	0.053	2		2	0.5	0
RS1	1/25/2012	12:50 PM		12.32	1.42	0.108	1		1	0.5	0
RS1	3/27/2012	11:05 AM		13.47	1.5	0.036	28		8	1	1.5
RS1	3/27/2012	11:10 AM			1.52	0.035	32		5	1	
RS1	4/23/2012	12:45 PM		15.29	1.39	0.03	6		3	0.5	0
RS1	5/23/2012	12:15 PM		14.59	1.38	0.029	40		4	1	

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
RS1	6/20/2012	1:20 PM		16.27	1.42	0.032	4		3	0.5	
RS1	7/23/2012	11:05 AM		15.54	1.32	0.024	20		2	0.5	0.5
RS1	8/21/2012	1:30 PM		15.59	1.34	0.105	24		3	0.5	0
RS1	9/26/2012	1:40 PM		15.5	1.34	0.072	8		0.5	0.5	0
RS1	10/29/2012	2:00 PM		14.51	1.4	0.027	8		2	0.5	0
RS1	11/14/2012	12:30 PM		12.81	1.34	0.028	10		1	0.5	0
RS1	12/17/2012	11:45 AM		11.85		0.033			2		0
RS1	1/29/2013	12:30 PM		12.92	1.35	0.033	2		2	0.5	0
RS1	2/26/2013	12:10 PM		12.42	1.42	0.028	1		4	0.5	0
RS1	3/26/2013	1:53 PM		13.37	1.52	0.04	100		3	0.5	0
RS1	4/22/2013	1:20 PM		13.79	1.52	0.04	2		3	1	0
RS1	6/24/2013	1:35 PM		16.19	1.44	0.031	6		2	0.5	0
RS1	7/29/2013	2:00 PM			1.48	0.032	1		2	0.5	
RS1	8/20/2013	12:45 PM		16.32	1.46	0.041	2		2	0.5	0
RS1	11/25/2013	12:50 PM			1.42	0.029	4		0.5	0.5	
RS1	12/16/2013	12:40 PM		12.34	1.44	0.046			3	2	0
RS1	1/28/2014	12:15 PM		12.25	1.44	0.028			2	1	0
RS1	2/26/2014	12:35 PM		13.62	1.53	0.035	1		3	0.5	0.5
RS1	3/24/2014	1:20 PM		14.52	1.53	0.029	2		2	0.5	6.2
RS1	4/28/2014	12:45 PM		14.5	1.56	0.029	1		5	0.5	0
RS1	6/16/2014	1:20 PM		15.35	1.6	0.034	4		2	0.5	0
RS1	7/21/2014	12:40 PM		16.44	1.59	0.044	10		5	0.5	0
RS1	8/18/2014	1:20 PM		14.39	1.59	0.035	160		2	0.5	0
RS1	9/22/2014	1:06 PM		15.05	1.59	0.039	28		2	0.5	0
RS1	10/20/2014	1:20 PM		13.69	1.6	0.035	2		0.5	0.5	3.9
RS1	11/24/2014	1:05 PM		12.77	1.68	0.032	2		3	0.5	0.4
RS1	12/8/2014	12:30 PM		12.55	1.74	0.023	20		3	0.5	2
RS1	1/12/2015	12:30 PM		12.47	1.98	0.018	2		2	0.5	0
RS1	7/13/2015	1:10 PM		16.24	1.94	0.053	20		4	0.5	0
MC1	6/3/2009	3:40 PM	8.24	20.61	0.06	0.13	58	3.1	6		79.2
MC1	8/3/2009	3:20 PM	4.07	20.37	2.78	0.132	120	2.05	8		6.2
MC1	10/5/2009	1:35 PM		9.86	2.06	0.202	40	0	4		5.5

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
MC1	11/30/2009	1:35 PM	0.81	6.26	5.02	0.12	10	0.78	2	1	
MC1	4/19/2010	2:00 PM	1.38	20.07	0.51	0.27	60		14	7	13.2
MC1	5/12/2010	1:50 PM	1.45	13.63	0.36	0.43	2		6	7	12.9
MC1	6/29/2010	1:20 PM	2.97	21.08	1.1	0.082	115	1.72	4	2	1.5
MC1	7/19/2010	1:50 PM	8.67	23.14	0.72	0.148	100	2.86	4	2	2.4
MC1	8/24/2010	1:50 PM	3.3	22.21	2.17	0.152	100	2.7	14	3	2.7
MC1	9/20/2010	1:30 PM	4.79	16.66	2.39	0.138	780	1.66	8	3	7.1
MC1	9/20/2010	1:35 PM			2.4	0.138	520		7	3	
MC1	10/25/2010	1:15 PM	2.4	8.12	3.7	0.142	260		1	2	
MC1	11/15/2010	1:15 PM	1.15	8.53	3.84	0.134	20	2.53	8	3	8
MC1	12/7/2010	1:15 PM	0.66	5.71	3.8	0.136			4	3	0
MC1	1/18/2011	1:05 PM	15.01	7.04	0.2	0.21	20	8.4	47	19	33.7
MC1	2/22/2011	1:15 PM	5.3		0.02	0.092	1		34	13	
MC1	3/30/2011	12:50 PM		8.61	0.02	0.097	24		28	21	
MC1	4/18/2011	12:40 PM		12.7	0.005	0.078	32		28	14	
MC1	5/18/2011	1:35 PM		9.91	0.1	0.147	120	5.3	31	18	29.7
MC1	5/18/2011	1:40 PM			0.09	0.156	52		30	18	
MC1	6/15/2011	2:00 PM		18.73	0.08	0.131	60		19	10	14.3
MC1	7/19/2011	2:30 PM	4.84		0.84	0.093	72		6	3	
MC1	8/22/2011	12:50 PM		20.2	0.56	0.199	400		10	5	10
MC1	9/12/2011	2:10 PM	6.9	17.77	1.08	0.116	1000		14	8	4.5
MC1	10/18/2011	1:00 PM	2.6		4.44	0.076	50		4	1	
MC1	11/30/2011	3:10 PM	2.8	2.34	1.46	0.096	56		10	10	
MC1	12/12/2011	2:55 PM		1.07	1.74	0.079	8		11	7	0
MC1	1/25/2012	2:05 PM	25.1	0.54	0.34	0.24	1		53	41	73.5
MC1	3/27/2012	4:29 PM	14.6	10.18	0.005	0.133	1		47	26	41.8
MC1	4/23/2012	2:10 PM	3.1	20.07	0.005	0.069	1		19	8	9.5
MC1	5/23/2012	1:35 PM	2.7	15.4	0.03	0.055	8		5	4	
MC1	6/20/2012	2:40 PM	4.8	18.8	0.28	0.074	40		4	4	4.6
MC1	7/23/2012	12:50 PM		18.27	2.34	0.103	540		6	3	4.5
MC1	8/21/2012	3:30 PM		16.74	3.32	0.142	40		8	5	5.4
MC1	9/26/2012	2:45 PM	6	16.4	1.43	0.119	100		6	4	4.5

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
MC1	10/29/2012	3:30 PM	2	12.95	3.83	0.09	12		5	2	0.3
MC1	11/14/2012	2:50 PM	1.3	8.64	3.49	0.095	6		4	3	1.6
MC1	12/17/2012	12:50 PM		3.36		0.107			8		4.4
MC1	3/26/2013	10:20 AM	2.8	3.69	0.03	0.101	20		23	14	23.9
MC1	4/22/2013	10:00 AM	6.9	7.54	0.01	0.088	1		26	11	17
MC1	6/24/2013	10:15 AM	6.5	15.77	0.83	0.065	80		3	2	0.7
MC1	7/29/2013	10:45 AM	9.2		1.04	0.166	80		7	3	
MC1	8/20/2013	10:20 AM	4.709	16.42	1.7	0.092	20		4	2	0
MC1	11/25/2013	10:00 AM			2.91	0.107	470		2	2	
MC1	4/28/2014	10:00 AM	5.458	6.43	0.09	0.036	24		13	6	4.6
MC1	6/16/2014	10:00 AM	7.755	14.66	0.48	0.054	620		6	2	2.9
MC1	7/21/2014	10:05 AM	6.741	17.89	0.9	0.061	200		17	2	0.2
MC1	8/18/2014	10:30 AM	9.99	17.73	0.8	0.083	10		11	3	5.6
MC1	9/22/2014	10:15 AM	9.321	14.66	0.78	0.063	100		5	3	3.2
MC1	9/22/2014	10:20 AM			0.78	0.065	180		5	3	
MC1	10/20/2014	10:25 AM	4	9.95	2.58	0.066	28		4	2	2.8
MC1	11/24/2014	10:15 AM	1.465	2.9	2.66	0.118	8		8	4	0.5
MC1	12/8/2014	9:45 AM	0.633	4.36	2.31	0.13	6		10	6	3.3
MC1	7/13/2015	10:00 AM	8.047	17.97	0.31	0.152	500		12	4	3.6
MC2	6/11/2009	11:00 AM									
MC2	3/29/2010	12:05 PM		7.53				32.17			
MC2	5/5/2011	12:30 PM		14.53							1.1
MC2	8/3/2009	10:05 AM			0.005	0.005	0.5		0.5		
MC2	10/5/2009	1:35 PM			0.005	0.005	1		0.5		
MC2	11/30/2009	1:35 PM			0.01	0.005	1		0.5	0.5	
MC2	12/28/2009	12:35 PM			0.005	0.005	0.5		0.5		
MC2	3/2/2010	1:00 PM			0.005	0.005	1		0.5		
MC2	3/22/2010	12:30 PM			0.005	0.005	1		0.5	0.5	
MC2	4/19/2010	2:20 PM			0.005	0.005	0.5		0.5	0.5	
MC2	6/29/2010	1:25 PM			0.005	0.005	1		0.5	0.5	
MC2	8/25/2010				0.005	0.005	0.5		0.5	0.5	
MC2	11/15/2010	1:30 PM			0.005	0.005	1		0.5	0.5	

Site Code	Date Sampled	Time Sampled	Flow	Temp °C	NO_3/NO_2 (mg/L)	T-Phos (mg/L)	E. coli (ct/100 mL)	Chl a (mg/L)	TSS (mg/L)	Turbidity NTU (LAB)	Turbidity NTU (Field)
MC2	12/7/2010	1:20 PM			0.005	0.005			0.5	0.5	
MC2	2/22/2011				0.005	0.005	1		0.5	0.5	
MC2	4/18/2011				0.005	0.005	1		0.5	0.5	
MC2	6/15/2011				0.005	0.005	0.5		0.5	0.5	
MC2	8/22/2011	12:55 PM			0.005	0.005	0.5		0.5	0.5	
MC2	11/30/2011	3:15 PM			0.005	0.005	1		0.5	0.5	
MC2	6/21/2012				0.005	0.005	0.5		1	0.5	
MC2	8/21/2012				0.005	0.005	0.5		0.5	0.5	
MC2	10/29/2012	11:45 AM			0.005	0.005	0.5		0.5	0.5	
MC2	12/17/2012	12:50 PM				0.005			0.5		
MC2	6/16/2014	10:10 AM			0.005	0.005	0.5		0.5	0.5	
MC2	8/18/2014				0.005	0.005	0.5		0.5	0.5	
MC2	12/8/2014	1:45 PM			0.005	0.005	0.5		0.5	0.5	

Appendix D. Summary of Implementation Activities

Lake Walcott Subbasin (HUC 17040209) 5-Year Review
Summary of Implementation Activities and Conservation Accomplishments Completed on Private Agricultural Lands from 2013 to 2018

Since 2012, the major projects and programs that have supported conservation implementation in the Lake Walcott Subbasin have been those associated with the Federal Farm Bill, and more specifically with the following Farm Bill programs: the Environmental Quality Incentives Program (EQIP); the Agricultural Water Enhancement Program (AWEP); the Conservation Cooperative Partnership Initiative Program (CCPI); the Conservation Reserve Program (CRP); and the Conservation Reserve Enhancement Program (CREP). In addition to these programs, individual farmers, as well as irrigation districts have implemented conservation practices without Farm Bill financial incentives, but with technical assistance provided by state and federal employees. Other producers, irrigation districts, and agricultural organizations have implemented conservation practices entirely on their own, without financial or technical assistance from state or federal government sources.

The table included with this report shows a list of all practices completed within the Lake Walcott Subbasin from 2013 to 2018 for which financial and/or technical assistance was provided by state or federal resources. It should be noted that this list does not include practices that may have been implemented by producers or agricultural organizations who did not receive any type of government assistance.

One of the most significant projects that was completed within the Lake Walcott Watershed was the A & B Irrigation District Pipeline Project. This occurred in Minidoka County at a total cost of approximately $11 million, of which $3.8 million was paid by AWEP. This project involved constructing a new pumping station to pump water directly out of the Snake River through 73,544 feet of new pipeline, thereby eliminating approximately 14 miles of open ditches and laterals. This project has had a positive impact on water quality by reducing surface runoff and associated pollutants, as well as a positive impact on irrigation water conservation.

Practices shown on the attached table that are of a structural nature, such as fences, irrigation or livestock pipelines, sprinkler systems, pumping plants, watering facilities, and others could be considered continuous. On the other hand, the management practices, such as nutrient management, irrigation water management, residue and tillage management, etc. may only continue for the amount of time the producers receive financial incentives to complete the practices (typically 3 years), although the hope is that the producers will continue the practices on their own after the 3-year period.

The costs associated with the practices shown in the attached table are difficult to quantify without spending a large amount of time looking at individual contracts. There are many different payment scenarios, depending on the type of practice that was implemented. However, using the Natural Resources Conservation Service (NRCS) payment schedules for 2013-2018, estimates were made for the amount of money paid by Farm Bill programs (typically 50 per cent) and money paid by participants. The total amount of money (not including administrative costs) for implementing the practices shown in the table from 2013 to 2018 is estimated to be $25 million. This includes the $11 million cost of the A & B Project.

Current and planned activities are dependent on the number of applications NRCS receives and how they rank as to positive environmental impact, as compared to other applicants within Blaine, Twin Falls, Camas, Cassia, Gooding, Minidoka, Jerome, and Lincoln counties. Rankings have not been completed for the current fiscal year.

Lake Walcott Subbasin (HUC 17040209) 5-Year Review
Conservation Accomplishments Completed on Private Agricultural Lands from 2013 to 2018

Prepared by Carolyn Firth
Idaho Soil and Water Conservation Commission

Best Management Practice Name	Practice Unit	2013	2014	2015	2016	2017	2018
Brush Management	ac	1145	231	645	3499	2597	778
Conservation Cover	ac	9	122	4	3910	1	1
Conservation Crop Rotation	ac	641	59				96
Cover Crop	ac	19	60				1316
Critical Area Planting	ac			5			
Fence	ft			9951			
Filter Strip	ac			1			
Fish and Wildlife Structure	no	1226	2				
Forage and Biomass Planting	ac	136					
Forage Harvest Management	ac				17		
Heavy Use Area Protection	ac	1	1	2			
Herbaceous Weed Treatment	ac	37	9				
Integrated Pest Management	ac	323	249	318	924	50	148
Irrigation Pipeline	ft	41680	16420	17611	115356	6972	11051
Irrigation Reservoir	ac-ft		1			1	
Irrigation Water Conveyance	ft		1858				
Irrigation Water Management	ac	1284	2098	2135	1373	942	717
Livestock Pipeline	ft	2757	6613	23530			
Nutrient Management	ac	1243	2389	1884	1135	935	2833
Prescribed Grazing	ac	8242	3827	5390	175	156	
Pumping Plant	no	10	5	4	9	1	3
Range Planting	ac	1196					
Residue and Tillage Management, No-Till	ac				106		1173
Residue and Tillage Management, Reduced Till	ac	1448		203	203	1353	114
Sprinkler System	ac	875	251	215	481	88	198
Structure for Water Control	no	4	3	4	2	2	1
Surface Roughening	ac	324					
Terrace	ft						7602
Upland Wildlife Habitat Management	ac	21931	3553		91	122	
Water and Sediment Control Basin	no						4
Watering Facility	no	2	10	12	1		